DataInformed

The Definitive Guide to Retail Analytics

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Table of Contents:

Table of Contents *(continued)*:

7 Best Practices for Retail Analytics Projects

by Malcolm Wheatley

In retail, it would be a reasonable expectation that the people who spend the most at a company's stores are also the most loyal customers. That's certainly what executives at one of the world's largest oil and gas companies thought when they set out to target new marketing efforts.

But a retail analytics project at the company's chain of European gas stations uncovered a different result. Working with Beyond Analysis, a business part-owned by Visa Europe, the retailer was able to analyse customers' total fuel spend paid for by Visa cards. It turned out that the top-spending customers were simply people who bought a lot of fuel—from every retailer in the market.

"The really loyal customers, who bought predominantly from just that one company, were among the Tier 2 customers—people with a lower total expenditure on fuel, but who spent it more or less exclusively at just that one company's gas stations," says Paul Alexander, chief executive of Beyond Analysis.

The result: the retailer crafted a retention strategy that targeted a totally different group of customers from that first imagined—Tier 2 customers, not Tier 1.

The best retail analytics projects guide business decisions by providing compelling insights into consumer behavior. In interviews, seasoned practitioners in the field share a common view on best practices for these projects, from establishing clear project goals to securing executive sponsorship, which will be familiar to line-of-business managers and IT executives alike. But because these projects are so strategic—and so challenging—it pays, these experts say, to follow these best practices. The benefits outweigh the costs—and should lead to profitable gains.

1. Link the project to the business's strategies.

Look at successful retail analytics projects, and you will see a pattern, says Paul Winsor, European retail industry director at Teradata. "Retailers who do analytics well can almost always articulate how projects map onto the business's strategy," he explains. "You can't suddenly wake up one day and decide to do analytics."

Strategic alignment is essential "to have a clear understanding about how what you are working on will help the business," says Alexander, whose company analyzes and sells data on every Visa customer transaction in Europe—something like one in four non-cash purchases.

This means mapping every analytics initiative, Alexander adds. "When we spoke to [UK retail giant] Kingfisher recently, we took their eight strategic priorities, and outlined to the board how data analytics could help them in each and every case."

Max Jolly, global head of digital personalization at retail analytics experts Dunnhumby, whose clients include Kroger and Tesco, stresses that good analytics projects always lead to customers. He asks: "If customers aren't responding, and you aren't influencing or changing their business decisions, then what's the point of the project?"

2. Have clear project objectives.

A common mistake among project managers is to set off on the data analytics equivalent of a fishing expedition, says John Lucker, a principal at Deloitte Consulting. Lucker is global leader of the firm's advanced analytics and modeling practice, and the co-inventor of three predictive modeling patents and two pending patents.

Even when experimenting with analytics projects, it is necessary to focus a team's questions, Lucker says. "It's important to ask: 'What levers are you trying to get hold of?' Are you aiming to attract new customers? Upsell? Move customers into a different category? Build loyalty? Drive customers towards higher margin products?"

He adds: "Too often, retailers say: 'Let's just sell more to every customer.' But that is potentially hazardous: it can create noise in the marketplace, as well as creating erroneous offers—offers aimed at products customers already buy. In other words, you have to ask: 'What's the mission?'"

Also helpful, Dunnhumby's Jolly says, is using the experience of past projects, knowing what works and what doesn't, to influence project objectives. "Our clients often talk to us about 'upselling' and moving customers towards more profitable brands," he says. "We try to dissuade them: in our experience, capturing new customers, and keeping customers loyal, offers a far bigger payoff than trying to move existing customers 'up-brand'," he says.

3. Walk in the customer's shoes.

And start with the consumer's view of the world, says Deloitte's Lucker. "Some customers know very clearly what a particular company could do to delight them, while others don't know—but do know that they will recognize it when they see it."

That means retailers have to think about "how they are going to figure out what customers are looking for," Lucker says. That is a different idea than looking at inventory and saying, "This is what I've got to sell, so how do I sell it to you?"

That product perspective represents the traditional view of retailers, says Jolly. Attributes about a product—how big it is, its weight, price and location—are all good data points, "but they don't actually tell you why a customer is going to buy it."

Viewing transactions from a customer perspective makes it easier to get to a consumer's underlying motivation, and thereby craft offers that will make a difference.

"Does a consumer buy a lot of frozen products? That might tell you that they are time-starved. Value products? They're cash conscious. Big products, or bulk packs? They're buying for a family. Do that for every product in the shopping basket, and you can build up a very rich picture of the consumer," Jolly says.

4. Start with the data you have.

With goals and alignment established it's time to look at the data. This is a key point in a retail analytics project, says Teradata's Winsor.

Managers "are in a position to articulate very clear business questions which need answering—and from which, you can determine what data is necessary to answer those questions," he says. "In short, what data do you have—and what data don't you have?"

This is not the time, though, to go in search of data that fill perceived gaps. Having most of the data will do. Alexander of Beyond Analysis says he's yet to meet a retailer where truly significant data was actually missing.

Alexander says he sees a lot of clients express interest in creating a customer loyalty program to collect new datasets so they understand their customers better. "It's a viewpoint that's understandable, but mistaken. Our response is that you can get 90 percent of the answer just from transaction data, which they already have—so start with that."

5. Look for quick wins and incremental gains.

Experts say that starting with the data you have, even if it appears that data is missing, can lead to faster progress—and demonstrated business value.

Colin Linsky, predictive analytics worldwide retail sector leader at IBM, says it is not uncommon to encounter strong resistance to starting a project "until all the data issues are sorted out." But, he adds, "If you wait for the data to show up, what you get is a big project that can be unmanageable. We say: 'Start small, and then grow.' Think big—but view the project as a part of that overall bigness."

"A retail analytics project is like building a house: you have to start with the foundations," says Diana McHenry, SAS's director of global retail product marketing who began her analytics career 27 years ago with Procter & Gamble.

"It about defining do-able first steps—easy business wins, to prove the worth of the concept, and then build out from there," McHenry adds.

For example, she says that optimization projects provide a decent payoff from readily available data: size optimization, space optimization, assortment optimization and mark-down optimization.

After that, go for bigger fish—having learned lessons from catching the smaller fry.

6. Get the team right.

A good analytics team needs technical experts, such as statisticians and data miners, but it is vital to include retail subject matter experts on the team, says IBM's Linsky. Even better: provide analytics training to retail experts.

"It's much easier to take someone who's familiar with retail, and train them in analytics, than to take a statistician or a data miner, and train them to think like a retailer," he says. "That way they have credibility within the organization, and will take ownership of the results. In other words, they're using analytics to make better decisions—and not just buying in some analytics."

Jolly says that the analytics project is not about coding and not only about analysis. "It's about institutionalizing analysis into tools and methodologies that can be used by people who aren't analytics people per se. It's about democratizing data: making it accessible to people who are numerate and interested in the answer, but who aren't necessarily analysts themselves."

Colin Haig, program principal at SAP Retail, says the trend for analytics competency centers—an in-house organization devoted to working on analytics projects–helps to formalize the marriage between technical and subject matter expertise.

"They're perhaps seen as more tactical than strategic, but they're undeniably linked to success," Haig says of the competency centers. "You've got people with process knowledge regarding doing the job, sitting alongside analytics people. It's a very, very powerful combination."

7. Win executive sponsorship.

A failure to have a business champion—emphasis on business—can kill a project, experts say.

"Time and again, we've seen retail analytics projects fail because they don't have business sponsorship," says IBM's Linsky. "A retail analytics project isn't an IT project, or a business intelligence project or an analytics project—it's a business project."

McHenry of SAS says that a common—and valuable—way to provide that executive-level business sponsorship is through an executive steering committee. "The best projects are those with an executive steering committee," she says.

She adds that such a committee might be formed only briefly, but the executive members "provide vital governance, and can provide extra horsepower when required."

"When you hit an obstacle that can be very difficult to resolve five levels down the organization, or in middle management, then executive-level steering committees can usually resolve it very readily," she says. "If it's important, they get it done." ■

Freelance writer Malcolm Wheatley remembers analyzing punched card datasets in batch mode, and using SAS and SPSS on 1970s-era mainframes. He lives in Devon, England, and can be reached at editor@malcolmwheatley.co.uk.

How Retailers Can Monetize Four Big Data Streams

by Christopher Nerney

Retailers are not new to having a "big data" problem, considering how much point-of-sale (POS) information they collect. Now these companies have an unprecedented opportunity to harness POS and other data sources using analytics to drive their businesses forward, according to a report from IDC Retail Insights.

But the success of their efforts will depend on how well-aligned key aspects of their businesses are in terms of managing big data and extracting critical insights through analytics, said Greg Girard, director of the IDC Retail Insights program.

"You have to make sure you manage your big data and focus your analytics in the context of ongoing business problems," Girard said. "And you need to be able to deliver those insights within the decision-management frameworks of key business areas."

The IDC Retail Insights study, Business Strategy: The Big Data and Analytics Pillar of 3rd Platform Retail IT, concludes that retailers will derive more value from big data and analytics if they successfully manage "five dimensions of change," including:

- **Intent:** Determining what they want to use big data for (business and market trends, customer personalization, community building, etc.)

"The focal points of big data and analytics need to align to real opportunities to change the way retailers conduct their business," Girard said. "It can't be big data for big data's sake."

- **Process:** How different parts of the enterprise operate and interact and how big data can improve processes
- **People:** Fostering a data analytics culture through education and training
- **Data:** Governance of structured and unstructured big data in a way that is consistent across data frameworks
- **Technology:** Making sure your enterprise has the tools to handle the "volume, velocity and variety" of big data

"You don't want the volume of big data to impede your ability to apply it quickly and in context," Girard said.

IDC identifies big data and analytics as one of the four pillars of what it calls the third platform of information technology (the first and second are mainframes and distributed computing, respectively). The other three pillars are mobility and broadband, social business and cloud services.

The study sees four big data streams for retailers to capture and analyze: customer data, social data, market data and supply chain data. "The goal of retail big data and analytics is to monetize these data streams in terms of customer loyalty, revenue growth, and cost reduction," the report says.

Girard said that "as an industry, retail has had a big data problem for a long time." He cites the huge amount of information at the point of sale, which he said retailers historically have not managed effectively.

With the rise of social media, Girard said, retailers now "have a very heightened awareness of the opportunities which the management of big data can provide."

But many retailers face a challenge in analyzing social data, one that is partly rooted in the shortage of people with specific data analysis skills.

"The analytical capabilities needed (for social media analytics) aren't the same as the analytical capabilities of people who are analyzing marketing campaigns and using traditional ways to understand customer behavior," Girard said. "That's a problem because those people who are charged with analyzing marketing campaigns and segments and getting customers insights are the first people to be asked to apply insights from social media data, which is a type of big data."

Girard cited Walmart and California-based supermarket chain Safeway as large retailers on the front edge of retail big data and analytics.

"Walmart is very aggressive in pursuing the management of big data," he said. "It has one of the largest data-management problems in the world due to its sheer size."

Safeway, Girard said, is "using big data to personalize prices" through its Just For U program that allows the supermarket to offer discount prices to customers entering the store who have registered and downloaded an app to their smartphones. ■

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Leading Retailers Harvest Big Data Analytics for Holiday Promotions

by Joe Mullich

Last holiday season, the La Jolla Group, a California retailer and apparel licensing firm that manages surfing brands O'Neill and Rusty, and motocross brand Metal Mulisha, plunged into big data in a big way.

Too big, it turned out. La Jolla ran a lot of online sweepstakes to capture social graph data about its online customers. "We over-engineered it," says Daniel Neukomm, who handles corporate strategy and development for the company. "We were never able to fully digest and respond to that data. That speaks to the theory that Big Data is only as good as your ability to use it."

As the crucial holiday selling season ramps up this year, the La Jolla Group is less concerned with the sheer volume of data it collects than in integrating that data with other channels, such as email and mobile. "We are focusing on things we know work—and not trying to be overly flashy and overly technical," Neukomm says. "We are taking a step back so we can go two or three steps further. We want to be surgical and sniper-focused, rather than shoot from the hip."

In a time of "Big Data" hype, such sentiments are not commonly espoused—but they are smart. Many retailers are in a period of digesting the concepts of analyzing large and different datasets to gain new insights about customers and markets.

While 80 percent of retailers say they've heard of "Big Data," less than half understand how to apply it to their business, according to a recent survey by retail research firm Edgell Knowledge Network.

Companies that are leading the charge, like the La Jolla Group, are focusing on social media efforts that can have a tangible impact—especially during the crucial holiday selling season, which can mean the difference between a year in the black and the red. Neukomm points to the La Jolla Group's use of ReadyPulse's Social Testimonial platform, a beta stage behavioral analysis provider that curates online testimonials. The technology brings enthusiastic comments from Facebook and Twitter to the appropriate place on the company's web site.

"That lifts the page relevance without us spending any more," he says. "The traffic on the page is more relevant to the viewer, and the [user's] stay on the page is longer and conversion is higher. This is especially important during the holidays, because those eyeballs are worth more."

Targeting Time-Strapped Consumers

That perspective dovetails with IBM Enterprise Marketing Management's 5th Annual Online Retail Holiday Readiness Report, which was released in August. The yearly report notes that mobile usage by consumers is exacerbating the trend of "surgical shopping," where time pressed consumers are zeroing in on the products and services they want. The declining consumer attention, the report notes, is a clarion call for retailers to make site visits relevant, personalized and engaging to the individual consumer—a sweet spot for big data.

"This year, social media playing in the analytics mix that marketers are much more attuned to social sentiment for not just brands, also the campaigns and holiday promotions," says Jay Henderson, IBM's global strategy program director for enterprise marketing management. Henderson says he's noticed that this holiday season retailers are analyzing their data more frequently. "They might look at an analytics report once quarter or once a month the rest of year," he says. During the holidays, they now want real-time monitoring. This is a big change in that historically retailers locked down for that retail period. "Now they realize they need to be more agile," he says.

For such reasons, online retailers, who are able to easily implement changes on the fly, have embraced analytics systems more quickly than their brick-and-mortar counterparts. Consider RetailNext, which produces a system for retailers and manufacturers that combines video analytics, on-shelf sensors, and data from point-of-sale systems. Retailers can find how long a consumer spends in front of a particular display and test ways to tweak layouts and products.

"This provides actionable information that allows retailers to test concepts quickly," says Shelley E. Kohan, vice president of retail consulting of retail consulting at RetailNext. "They could test a concept on Saturday, and make a change on Monday."

Using this information, a retailer could coax store traffic in ways that leads to a slight uptick in sales. Multiply that across 100 stores in a retail chain during the business holiday season, and the aggregate sales could be significant.

Tips for Retailers Launching Big Data Analytics

- **Get personal:** Big data analytics can allow retailers to personalize advertising and product information to individual customers online and in-store.
- **Forge alliances:** The applications are still so new to many merchants that leading retailers find they must forge relationships with vendors to help develop products specifically for their needs.
- **Take action:** Don't collect mounds and mounds of data without a clear strategy of how you intend to use it, and make it actionable.
- **Take baby steps:** Don't get swept up in the "Big Data" hype. Move swiftly but deliberately.

The Goal of an 'Omnichannel Experience'

Kohan says that compared to online-only merchants, the brick-and-mortar retailers want to see a greater amount of data over time before they make in-store adjustments. "As they become more accustomed to analytics and Big Data, we anticipate their comfort level in making quick changes become higher," she says. "Right now the mindset, especially with specialty retailers, is let's make sure."

That said, there is more movement to bring big data applications offline to the brick-and-mortar stores to forge a true "omnichannel experience" in retail parlance. This holiday season, the La Jolla Group, which also runs its own retail stores, is partnering with a new company called Swarm, which has developed a way to send targeted push notifications advertising custom deals and programs to shoppers' smart phones without them ever downloading an app or even opening their browser. The system detects a customer's wireless antennae when he walks in the store and prompts your browser to open up, giving him the option to explore the platform. "We are using that platform to capture walk-by traffic in a way we've never been able to do before," Neukomm says.

During the holiday season, the La Jolla Group will use the system to tinker with in-store promotions, such as adding a gift with purchase to bump sales. Neukomm stresses the approach—like everything the company is doing with big data—will be highly targeted.

"The ultimate goal of any industry is to put the right product in front of the right customer at the right time," he says. "Big data is an almost unavoidable competitive requirement in retail today. But we need to be nimble and play smartly. We need to pluck and choose the technology, and go beyond traditional vendor-retailer relationships. We are coming in on the ground level—there is no formula. We are the sandbox, the testing ground where we will refine and scale the technology." ■

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Dove Chooses the Beauty of Data-Driven Marketing

by Gretchen Littlefield

Thanks to a stream of female-centric campaigns, few businesses know their audience better than personal care brand Dove. From beauty patches to curly hair, Dove integrates its own business objectives with larger consumer trends.

Across its campaigns, Dove consistently incorporates consumer data to better understand and connect with its customer base. And that data-driven strategy is paying off for Dove, and for others.

A recent Infogroup study found that, for the first time, nearly half of marketers are seeing a return on their big data investments. According to the study, 47 percent of those surveyed already are seeing ROI on expenditures related to data technology. A year ago, that number was only 39 percent.

Positive ROI can be a reality with the right data and strategies. Fortunately, ROI is leading to larger data budgets. Most marketers expect their data-related budgets to increase in 2015, and more than a quarter of respondents plan to start spending on data initiatives in the next two years.

Based on the survey results, we identified the differences in practices between "leaders" (those already seeing data-related ROI) and "laggards" (those who haven't yet seen ROI). After comparing and contrasting the leaders and laggards in data investment, we arrived at five data do's and don'ts for the successful implementation of data-driven programs. We will use Dove's experience to illustrate the value of a data-driven approach.

Do: Collect Enough Data

One of biggest data-related challenges marketers said they expect to face is data collection. Collecting too much data can leave marketers feeling overwhelmed, and collecting too little leaves a brand with insufficient information to understand its customers and generate meaningful insights about them.

All marketers want to collect more customer data, regardless of investment or ROI. The majority of marketers said they feel that they aren't collecting enough (only 10 percent reported that they think they collect too much). Despite this, marketers rely heavily on customer purchase history and third-party lists as primary sources of customer data. As a result, they overlook digital sources such as web browsing history and social media activity.

By the numbers, Dove does a good job of collecting enough data, as well diversifying the types of consumers it surveys. For example, the brand's most recent campaign, Choose

Beautiful, saw women from four cities around the world – San Francisco, Delhi, London, and Sao Paulo – participate in what essentially was a human data study. Dove was able to collect more and stronger data by incorporating perspectives from its global consumers, which is especially smart because its campaigns are consumer-focused. Dove's adherence to widespread data collection provides strategic insights for future marketing endeavors.

Do: Know Your Customers

When consumers choose Dove, they are not only choosing personal care products, but they are also aligning their purchasing power with the brand's stock in self-confidence. Dove knows its customers so well that it even challenges users to more positively reimagine how they know themselves.

This attention to customer knowledge situates Dove among a strong group of the aforementioned data "leaders." When asked about their confidence in executing personalized data-driven marketing campaigns, data leaders are one step ahead. Put simply, successful marketers know the people to whom they are marketing. Almost three-quarters of data leaders said they are confident in their customer profiles, compared to only 56 percent of laggards.

To successfully execute their campaigns, marketers must understand diverse data points such as customer habits, life stages, and more. To do this, they must clean up their data frequently. Quarterly data cleansing just won't cut it, and our study found that successful marketers clean their data at least monthly.

Don't: Stick to the Basics

When targeting prospects, most marketers rely solely on names or basic demographics to personalize their campaigns. But marketers who are seeing returns on their data investments go beyond the basics. They rely heavily on more sophisticated, deeper data such as consumer interests, brand interactions, and event triggers.

Dove's marketing efforts stretch far beyond basic data points. The brand has a track record of deeply engaging with consumers' feelings and emotional connections to products. This relationship encourages customers to develop their own personal connections with the brand, as well as with the challenging narratives that Dove campaigns look to address. As Dove often reiterates, there never is, and never will be, only one type of woman. Smart marketers should feel the same way about consumers and work toward less traditional marketing demographics.

Do: Embrace Multichannel

Data leaders recognize this and take it into account in their marketing strategies. More than 60 percent of marketers use data to execute personalized email and direct mail campaigns, and 40 percent use data to personalize website campaigns. Leaders also have done more to embrace personalization in mobile and display ads.

With its YouTube videos, televisions ads, print ads, etc., Dove is usually ahead of the game when it comes to embracing multichannel efforts. For example, Dove links each of its campaigns with a hashtag (for example, #choosebeautiful) that pushes consumers to interact with the brand across a number of channels.

Do: Personalize

Leaders and laggards face the same challenges with personalization, including channel integration, a lack of quality customer data, and fragmented systems. Although there is room for improvement, the majority of marketers are personalizing their campaigns: 62 percent of data leaders say they "always" or "often" send customized messages and are enjoying better returns as a result. Customized messaging should be consistent, too, as customers expect the same brand experience, regardless of touchpoint.

Personalized campaigns may be an end goal of big data implementations, but marketers should begin deploying them as soon as possible to reap the rewards of greater customer engagement and loyalty. One of the things that Dove does most successfully is fostering personal connections between consumers and the brand. Through a combination of thoughtful videos and emotional testimonials, Dove creates campaigns that feel distinctly human. Dove's efforts are deeply personal and challenge individuals to imagine themselves inside of the campaigns. Personalization matters, and marketers can use big data to improve their efforts.

With 20 percent of survey respondents expecting to see positive ROI this, the industry is reaching an important tipping point, at which the majority of marketers should be reaping the benefits of their data investments. The success of Dove's many campaigns proves that strong data leads to positive customer engagement. ■

Gretchen Littlefield is responsible for the overall management, strategic planning and growth of Infogroup Media Solutions. This includes leading the Business to Business and Business to Consumer teams as well as services for Nonprofit, Political and Federal Government verticals. Gretchen joined the company in March of 2006 and, under her direction, the business unit transformed, growing by more than 300 percent.

Big Data and the Human Side of Business

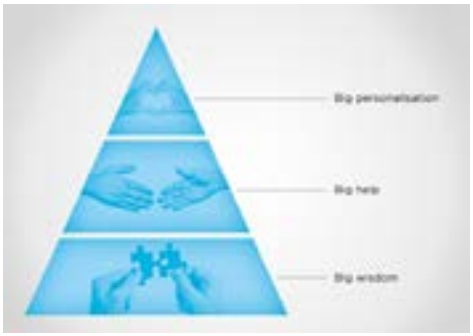
by Steven Van Belleghem

It seems like a paradox. The digitization of the world is making human relationships more valuable. Pure human interaction is becoming scarcer than ever and when something becomes scarce, its value increases. However, this doesn't mean that digitization and data have become less important. It simply means that human interaction and data can reinforce each other. Think about this: If data make everything predictable, what will happen to the value of a positive surprise? Exactly!

Big Data Should Be About Big Relevance

The digital customer relationship demands an excellent data strategy. The primary objective of the data strategy should not be a short-term increase in sales revenue. It should focus instead on increasing the levels of relevance in the customer relationship.

One of the foundations to successfully apply this philosophy is data: how you acquire it, how you store it, and how you use it. For the customer, big data is all about big relevance. Modern consumers expect to receive some form of added value in exchange for all the data they provide. To ensure they receive this added value, a three-step pyramid model has been developed to show how data can be used to increase customer relevance.



The first step in the model, big wisdom, is the need for greater customer knowledge. It is the foundation for everything else. In early 2014, Dutch retail group BAS rolled out beacon technology in its stores. In its initial phase, the only purpose was to collect more information about customers' shopping habits. "The creative marketing work will only come into it later," the company said. There have never been this many options to acquire more and better information about customers.

In the second step of the pyramid, big help, the collected data are used to provide a better service to customers. A total of 44 percent of consumers are happy to make their data available for analysis if this will result in a better customer experience.

In the third and final step of the pyramid, big personalization, the data are used to personalize products, services, and communication. Again, 41 percent of consumers are willing to share their data to enable such personalization. And 46 percent would like to receive personalized information. Over time, the combined effects of the correct use of the pyramid structure will indirectly benefit the company's bottom line.

If Everything Becomes Predictable, Surprise Becomes More Valuable

Big data enables predictive marketing. Marketers can now predict consumer behavior. In the old marketing world, marketers waited for customers to act and measurements only happened after the customers' actions. Today, marketers assess previous behavior to predict future behavior. This is really cool, but it can end up being pretty boring as well. If Google knows what you like, you will find what you like. If you are interested in a certain brand of shoes, you will see advertisements for those particular shoes.

All of this available online information allows customers to prepare every experience and purchase so well that they always know what to expect. When consumers plan a vacation, for example, they might visit 20 different websites. Once they arrive at their holiday destination, their first reaction tends to be, "This looks exactly like the pictures I saw online." When people go to a concert, they check out content on YouTube first to see if the tickets are worth the money. In this world made predictable by marketers and content transparency, consumers are hardly ever surprised anymore. Therefore, it is really worth it to look for ways to surprise customers in a positive way. Once again, as surprises have become less frequent, their value has increased.

When Digital Becomes Human

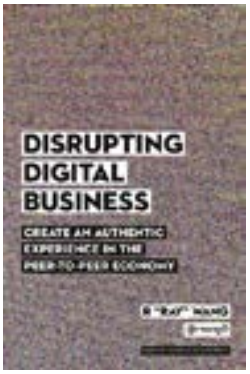
This philosophy is the concept of my latest book, "When Digital Becomes Human," which is about the customer relationship of the future. The customer relationship of the future obviously will be digital. Customer relationships are increasingly automated. And without big data, automation is impossible.

However, the more a customer relationship is digitized, the more valuable the human interface becomes. It is not a case of human versus digital, but a case of human and digital. Digitization is good for automation, efficiency, and prediction. The human interface is good for creating an emotional bond between a company and a customer. Humans need to be good at those elements that computers are less good at. Empathic thinking and communication, passionate behavior, and creativity are unique human skills. (This is currently the case, but may change in the future.) It sounds easy, but the key question is, "Is your company motivating its employees to be really good at these three skills, or is your company holding its employees back from using these skills?" Companies investing in the strengths of digitization and the strengths of humans will create a new, unique form of customer centricity. ■

Steven Van Belleghem is a thought leader on the transformation of customer relations and the future of marketing. He is an expert at inspiring companies to become true customer-centric organizations in this high speed digital world.

Data Exhaust: How Contextual Relationships Drive Engagement

by R "Ray" Wang



Great shops were known for their personalized services and their ability to know what the customers wanted before they did. That ability to deliver based on context was critical to the authenticity of the merchant's brand and the authenticity of the relationship. In fact, that authenticity could not easily be copied by a new competitor. Those contextual relationships were a massive barrier to entry for competitors and a barrier to exit for customers.

But in the environment of digital business, things are different. Skill is required to bring back that shopkeeper level of intimacy between businesses and customers. Today, every "check-in," every "like," every purchase creates a digital footprint. And that digital imprint happens when no one is really looking. It can happen across any channel at any time, and it may not always be tracked or always provide a 360-degree view of interactions. This "data exhaust" is made up of everything we interact or engage with. These signals provide the context of our interactions.

The volume of data we capture is already beyond human comprehension. In 2013, 90 percent of the world's data had been created in the past two years, and 80 percent of that is what's called unstructured data, meaning clicks, comments, posts, pictures, chats, and so on. And while this digital exhaust often lives in different systems across the digital ether, the data is being aggregated.

Less than a decade ago, it was unfathomable that we could even capture all of those interactions, store that information, and glean insights. With today's computing power, we can do that with ease. The interaction data is different, though. We're no longer thinking in a world of CRUD—create, read, update, or delete—in those old, quaint, legacy transactional systems. But in a world where we can ask why something is liked or shared or published or responded to, we're changing not only how we interact with computers but also how we interact with one another.

These systems' sense-and-respond nature is part of these systems of engagement. And in three to five years, we'll move on to systems of experience and mass personalization. Interaction data recorded over time is at the heart of context. We're capturing as much data as we can to improve our understanding of context. What may seem like a tremendous amount of information is in fact only the beginning in this digital era. We've just begun putting sensors in everything from running shoes to jet engines.

In addition, analog and digital experiences are converging and creating a very different world. Pretty soon we will be drowning in all this data. We're going to hit the limits of a real-time world. We are already seeing that happen in these early years of social media.

Every status update, every check-in, every post now elicits a groan. More and more, we are experiencing a real-time information overload. Real-time updates are creating disengagement because as soon as they are posted, the information is no longer relevant.

Think about the unfathomably bad experience we have with junk mail. If you're trying to stay authentic, you don't want communications that aren't relevant. It's noise when we already have tons of noise and very little signal. So how do we avoid drowning in this sea of information? This is the conversation between real time and right time. What we long for is right-time relevancy. Delivery of the right information, at the right time, in the right mode, for the right situation, with the right priority level is what we're after. And how we get there is through context. Context is the key driver of right-time relevancy. Which data should we capture? In their various relationships and roles, an individual can have multiple personas and should be treated as such. And each of those interactions basically takes us away from artificially forced-fit designations of business to business or business to consumer. The reality is that you might have different roles across the board. The main thing to think about roles is, Who are you? Who do you represent today? What's your identity? Roles are the part of context that we'll start with.

Then we have relationships. Are you a friend? Are you a new customer? Are you a prospect? Did you buy something in the past? What did you buy? How do you tie back to the company? Whom do you tie back to? Are you a loyal customer? Are you an angry customer? What's that relationship structure? We have roles and relationships, and then there's time. When are you engaging? How often do you engage? And how long is that engagement? Time and frequency play a role because if you're passing through a train station at 5 p.m., versus passing through at 8 a.m., there might be something different. We also have to think about physical location. Where are you located? Are you outside the building? Are you inside? Are you away from the shop completely? The business process is also important. A customer might be in the middle of a process involving an order. How does that customer cut across different departments and functional fiefdoms if they buy a product online, return it in a store, and then use chat software for support? If you're asking a question about customer experience, if you're asking a question about order status, you're sitting in the middle of a fluid business process; things are going to be moved and put together like a choose-your-own-adventure book. The people inside organizations need to know where customers are in a process in order to address their concerns.

Sentiment plays a part, too. Is the customer happy? Is she sad? What is he feeling? How do we capture this? How do we know your mood at the moment? Finally, we'd love to get to intent. Can we predict what you will do next based on your past behavior? What clues show you're willing to take the next action? Roles and relationships, time and frequency, location, business process, sentiment, and intent—these are the context clues that provide us with the relevancy that moves us from real time to right time. ■

Building Consumer Loyalty in the Digital Age

by Duane Lyons

Research study after research study have all confirmed one simple truth – the explosion in consumer access to digital channels is having a profound impact on what products consumers buy and how they buy them. The proliferation of digital devices and channels have forever changed the shopping paradigm and are impacting almost every phase of the typical shopping journey, from research and awareness all the way to post-sale service.

Along with the explosion in digital channels, there is also an explosion in data. While most would welcome this additional insight, the reality is this data explosion is a double-edged sword. If implemented correctly, it can give consumer-focused organizations a massive competitive advantage. However, if implemented incorrectly, it can result in frustrated business users, failed projects and, even worse, lost customers. Taking the time to develop a customer loyalty strategy can reap significant benefits and help move the needle in today's ultra-competitive retail environment. Some of the biggest opportunities include the following:

Creating a consolidated view of the customer. Many organizations have made considerable investments in building databases to house their customer information and associated campaign and analytic processes. Unfortunately, many of these solutions rely exclusively on data that the retailer has within its enterprise and fail to leverage the wealth of information available about these same consumers in the social space. To address this challenge, many companies are adopting social login across their branded sites as well as within mobile apps. This gives the organization access to the consumer's social profile in a permission-based manner and enables them to augment the information they already have available. After all, a typical Facebook profile has a wealth of information that can be used by marketers to build the "Database of Affinity," which Forrester refers to as a "Holy Grail" for marketers.

Establishing in-store location analytics for sales improvement. Retailers know how impactful proper product placement can be within a physical store. Looking to improve sales, they have been trying for decades to understand how shoppers move throughout the store and its correlation to buyer behavior. Unlike the physical store, in the e-commerce world retailers can analyze purchases relative to behavior in infinite detail. Unfortunately, the same thing just hasn't been possible in the brick and mortar world. Retailers want the ability to track shopper behavior in the physical world, understand where buyers are spending the most (and least) amount of time in the store, and how that relates to their purchasing decisions. The good news is that the rapid adoption of Apple's iBeacon technology and similar cell phone technologies will allow retailers to track shopper movement throughout their stores. Of course, this needs to be done in a permission-based manner and will require the consumer to download the appropriate app and give the merchant permission to track their movement through the store. Once activated, the retailer can then analyze the shopper's movement and compare that to actual purchases in order to enhance product positioning.

Enable real-time mobile offers. Based on a shopper's history, current shopping basket, and current in-store movements, suppliers can deliver targeted offers during the shopping experience, at checkout, or even post-visit for use on future shopping trips. Furthermore, as more consumers use their smartphones to pay instead of using cash or a credit/debit card, this scenario becomes even more feasible. One interesting and emerging example is within the quick-serve restaurant (QSR) space. In addition to supporting eWallets such as Apple's iPAY, numerous QSR's have rolled out their own apps that allow consumers to order and pay for their food via their mobile device. With this infrastructure already in place, the next logical step will be adding an analytics layer to deliver cross-sell/upsell suggestions as the order is being made.

Consumer-based Internet of Things. More and more home devices, such as thermostats, televisions, water heaters, video streaming devices, home routers, home security sensors, and garage door openers, are transmitting a stream of data back to the manufacturers. In most cases, the device manufacturers provide apps that the consumer can use to monitor and/or control the device. In the future, it is quite possible that new standards will emerge that will allow consumers to use a single app to control multiple in-home devices from a single app. When this occurs, there will be tremendous opportunity to leverage this information to not only learn more about consumers' preferences, but also to deliver targeted, relevant messages to them. These messages could be marketing focused, informational in nature, or both.

While the opportunities are endless, the needs of each consumer-focused organization are, in fact, unique. However, two distinct similarities have emerged across nearly all use cases:

- The emergence of new digital/mobile technologies and/or social channels that have reached critical mass only within the last decade.
- The generation of massive volumes of data that can be analyzed to better understand the business, sometimes even in real time.

Suffice to say that traditional data management architectures are not optimal for each of these new digital use cases. Analyzing all the data coming from the digital space requires new solutions, and many organizations are considering enterprise Hadoop solutions instead of traditional RDBMS technologies. As a matter of fact, the thought process is evolving to "Why not Hadoop?" from the earlier "Why Hadoop?" mindset. In addition, there is a rapid emergence of ACID-compliant RDBMS on Hadoop platforms that allow end-users who are comfortable with SQL to use a familiar interface. This allows IT to start using Hadoop in a way that immediately drives value, such as reducing costs by hiding some of the complexities typically found in Hadoop.

Emerging use cases such as those described above, combined with a rapidly evolving technology landscape, are creating tremendous opportunities for organizations to differentiate themselves based on analytics. With that in mind, it is critical for organizations to evolve to the changing digital landscape and define their analytics strategy so they aren't left behind by the competition or, worse, abandoned by their customers. ■

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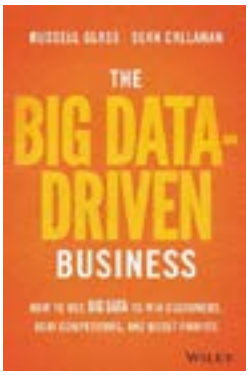
Using Data to Better Understand Customers and Pursue Prospects

by Russell Glass and Sean Callahan



Sergey Brin and Larry Page. Reed Hastings. Jeff Bezos. The founders of the most successful brands of the dot-com era built their companies with a data-driven customer focus as the cornerstone of their business model. "The balance of power is shifting toward consumers and away from companies. . . . The right way to respond to this if you are a company is to put the vast majority of your energy, attention, and dollars into building a great product or service and put a smaller amount into shouting about it, marketing it," Amazon founder Jeff Bezos said in a 2010 interview with Charlie Rose, according to Inc.com.

But how do you consistently build great products? For companies such as Google, Netflix, and Internet radio service Pandora, collecting and leveraging data are essential to serving customers and creating great products for them.

"If you look at the mind-blowing growth of some brands over the past couple of years, they're all brands that use data in new, intelligent ways," said Brian Kardon, CMO of predictive lead scoring company Lattice Engines.

Data-driven, customer-focused companies use the data they amass as a matter of their daily business processes to understand their customers—both individually and en masse—better with every single transaction. "Once there was only radio, and now there's Pandora," Kardon said. "Pandora is intelligent. It takes in all the data about what you like and don't like. Pandora knows what you're playing, what you like to listen to. It even knows where you're located. . . . All of these new things are replacing old things, because they have a lot more data, a lot more intelligence, and they are so much more valuable to the consumer."

Pandora is becoming increasingly popular with consumers. Pandora said it logged 1.7 billion listener hours in April 2014, which was a 30 percent increase over April 2013. Pandora is even more popular with advertisers, posting $194.3 million in revenue in the first quarter of 2014, a gain of 69 percent over the first quarter of 2013, according to a company Securities and Exchange Commission (SEC) filing.

In its original incarnation, Google operated solely as a search engine. The company used data—what the consumer typed into the search box—to provide consumers with the information they were looking for, and organized the information based on what related pages were linked to most often. These details reveal consumers' wants and needs, and Google is then able to monetize this consumer data by allowing marketers to bid on ads directed at the consumer via its AdWords platform.

With its acquisitions of YouTube in 2006 and DoubleClick in 2007, Google moved into new areas that serve marketers. Recently, Google has been expanding into new customer-focused technologies that will provide marketers with more data on consumers. Key among these acquisitions is that of Nest, a manufacturer of intelligent thermostats, in early 2014. "It's a thermostat, but it knows the outside temperature, too," Kardon said. "It knows that you like it cooler at night, but hotter during the day."

The Nest acquisition is one of Google's first moves in positioning itself for the next iteration of big data: the rise of the Internet of Things, in which a variety of electrical and electronic products, ranging from refrigerators to jet engines, send signals about customer usage back to manufacturers, distributors, and retailers.

Netflix Flexes Its Data Muscle

Netflix, at first glance, doesn't seem to be a data-driven business. In its infancy, the video rental company's chief differentiator was an innovative delivery approach, one that saved consumers a dreaded trip to the video store and eliminated exorbitant late fees by shipping movie and TV series DVDs via the U.S. Postal Service. This unlikely and counterintuitive innovation, almost on its own, sent Blockbuster and its ilk into bankruptcy.

But data has always been a part of Netflix's approach. With its subscribers providing their viewing preferences in their queue—not to mention the movies and TV shows they actually watched and when and how often they watched them—Netflix gained deep insight into its customers' viewing habits. The company also knows where its customers live. And now, with the advent of streaming, Netflix knows even more about its customers and their viewing habits than ever. The company, for example, knows when viewers pause, rewind, or fast-forward what they're watching.

One of the ways Netflix is leveraging this data first became crystal clear when the company funded and developed its own TV series, House of Cards, which debuted in 2013. Netflix executives took the unusually aggressive move of putting up $100 million to green-light two full 13-episode seasons of the show.

The reason they felt so confident? Big data.

When they were pitched the show, which other content producers took a pass on, Netflix executives consulted the data they had on the viewing habits of the company's almost 30 million subscribers, according to David Carr's New York Times article, "Giving Viewers What They Want," published February 24, 2013. Netflix executives confirmed that their subscribers watched David Fincher–directed movies such as The Social Network. They also watched movies starring Kevin Spacey. And many had downloaded the original British version of House of Cards. Netflix could even tailor its marketing of the show, serving Spacey-themed trailers to its users who had watched his films, Fincher-themed trailers to The Social Network fans, and a differently edited trailer to users who had seen the original House of Cards. As Carr wrote in his article, "With those three circles of interest, Netflix was able to find a Venn

diagram intersection that suggested that buying the series would be a very good bet on original programming."

That big data–inspired bet was indeed a very good one, as the binge viewing of the House of Cards series by Netflix subscribers will attest.

Amazon is also moving into content creation, in both publishing and video production. Like Netflix, Amazon's beginnings were simply delivery of goods. Amazon started as an online bookseller and quickly moved into selling other entertainment, such as music and movies. Its recommendation engine—an algorithm that suggests books, CDs, or DVDs a user might be interested in based on what similar users had already bought—is uncannily accurate and wildly successful.

Amazon long ago moved beyond selling entertainment to selling virtually any consumer goods, ranging from electronics to patio furniture. The company has even moved into selling industrial products, a move that has brought it into competition with industrial distributors such as Grainger and McMaster-Carr. Today, Amazon is one of the most effective e-commerce engines ever invented.

In addition to convenience and ease of use, data underpins Amazon's success. Each new purchase by a user only makes Amazon's recommendation engine that much more accurate.

"Of course," Brian Kardon said, "Amazon is the king. It knows what you put in your shopping cart—what you covet but didn't buy. It knows your product ratings, where you live, what your neighbors buy. If you live in Chicago, Amazon doesn't have to know it's snowing, but they know that your neighbor just bought a shovel and eight pounds of salt."

That's incredibly valuable real-time marketing information, and constantly collecting and using data like that to deliver offerings its customers want is central to Amazon's business model. ■

The Wisdom of Crowds: Using Big Data to Optimize Pricing

by Doug Fuehne

There's no denying that big data is a big deal to sales teams and executives. Consider that every minute of the day, Facebook users share nearly 2.5 million pieces of content, nearly 300,000 Tweets are posted, email users send more than 200 million messages, and Google receives more than 4 million search queries. Buried in that mountain of data – from credit-card transactions, frequent-buyer points, cell phone calls, website clicks and emails – lies important, game-changing value. The volume and velocity of this data is growing at unprecedented speed, but for companies that successfully respond to the challenge and opportunity of big data, the result can be a series of actionable insights that can have a significant impact on win rates, deal sizes, and sales-cycle length. According to a study by PricewaterhouseCoopers, those who described their companies as proficient in demand analytics estimated that they outperform their industry peers in sales, margin, and profit growth by more than two times, and show an eight-times better total shareholder return on capital.

How does that happen? It's like the principles that James Surowiecki identified in his landmark book, "The Wisdom of Crowds," that describes how large groups of people can collectively come up with precise answers to different questions. Big data gives us an opportunity to aggregate information from diverse, disparate, and independent sources and replicate "crowd wisdom" in a marketing context – particularly pricing information. This is a question that's ideally suited to the "wisdom of crowds" because, fundamentally, what is a price if not the collective judgment of a free market?

In many companies, data warehousing is the foundation of reporting and analysis initiatives, and that's a strategy that does deliver some value. Sales reps can find answers to basic questions like, "What industry is this customer in, how large is their business, and in what region they're located," but it leaves unanswered the most important question in any sale: What is this particular prospect truly willing to pay? Getting the answer to that question requires finding important correlations among a much wider variety of factors tucked in piles of data from inside and outside the organization.

Pricing analytics seeks to define thousands of customer segments based on commonalities among hundreds of independent variables. By identifying correlations based on rich, deep data histories, companies can make smarter decisions and pursue targeted sales, marketing, and pricing strategies that have a much greater likelihood of success. And that means more revenue and faster sales cycles.

How Big Data Helps Answer the Key Sales Question

Using a range of sophisticated statistical analyses – as well as breakthrough IT infrastructures equipped to plow through and process petabytes of data – data scientists are now unlocking the hidden value of big data for more effective sales and pricing strategies. They are delivering crucial guidance right at the moment of transaction. They are tapping into ERP systems, CRM histories, competitive analyses, third-party econometric

data, subscription sources, and much more. They're pursuing the best answer to the key question: "What is the maximum amount this prospect is willing to pay?"

That analysis starts with an effective segmentation strategy, scanning and rescanning vast mountains of historical data to create "peer groups" of customers and prospects who demonstrate similar purchasing behaviors that are meaningfully predictive. But this doesn't mean simply lumping prospects or customers into rudimentary "A," "B," and "C" buckets. Instead, it means creating hundreds, thousands, or even tens of thousands of narrowly and sharply defined peer-group segments defined by dozens of variables such as company size, industry/NAICS codes, states, ZIP codes, previous order frequency, average order size, preferred provider status, shipping preference, market competitiveness, sales channel, preferred payment method, D&B credit score, time spent on website in the past 30 days, number of telephone calls received in past six months, and more.

For example, suppose you are an office supplies retailer. Just one peer group segment could be for consumers based in Massachusetts with at least a six-month history of purchases who make purchases every 30-40 days using the website. Their preferred credit card is Visa, they have accepted one upsell recommendation in the past year, they spend an average of only 10 minutes per month on the company website, and place an average of eight calls to the customer-care center every six months.

With the volumes of data that are usually available, this kind of segmentation can give rise to data sparsity problems. But with big data, even a massive number of segments can be populated with enough data to derive statistically significant results. We can verify the value of these dimensions with simple analyses and assemble them into a predictive model. This lets sales and marketing tap that crowd wisdom more effectively and formulate optimal pricing levels and strategies.

The Biggest Bang for Your Buck

It's tempting to assume that big data-driven predictive models are valuable to only direct-sales teams pushing big-ticket complex sales. In reality, big data is having the biggest impact in sales and marketing organizations with two key characteristics: a large number of SKUs – in the tens of thousands – and a network of horizontal customers that spans industries and geographies. In direct sales of high-priced items, sales teams have fewer transactions to manage and can devote resources to individual pricing analyses. By contrast, in distribution organizations, margins are typically quite thin, and the power of pricing is often magnified.

Another strategic advantage of data-driven pricing analyses comes from speed. As the saying goes, "Time kills all deals." Win rates can increase significantly – without sacrificing margins – by presenting the optimal price as early in the sales cycle as possible. By avoiding the protracted, outdated negotiation tactics near closing time, sales teams can avoid disruptions and delays.

For sales and marketing organizations seeking a surer footing as they work to optimize pricing, the best path may be to tap into the hidden power of big data and gain new insights into the factors contributing to price sensitivity. ■

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Use Behavioral Insights to Develop Better In-Store Promotions

by Jamie Rapperport

Each year, the consumer packaged goods (CPG) industry spends $300 billion on trade promotions. That's over 17 percent of revenue at an average CPG and nearly twice what they spend on marketing, and the number is only growing. Despite this high level of investment, any consumer goods leader will tell you that more than half of all promotions fail to deliver a positive ROI, and many lose 50 cents on the dollar.

Most in-store promotions are ineffective because there is no effective method of finding new, winning promotions without taking big risks. In a world in which missing a promotion week can mean missing your volume target for the year, who can afford to take a risk on something without knowing it's a winner? So CPG companies recycle the same old promotions week after week, year after year. Inevitably, shoppers get used to them, and the promotions become stale and ineffective.

Looking Backward Instead of Moving Forward

Today, most CPG companies use "post event analysis" software, commonly known as Trade Promotion Optimization (TPO), to track their trade promotions. TPO software helps companies measure the results of their promotions after the event is complete, relying on econometric regression analysis to sort through large volumes of aggregated point-of-sale data.

These systems are helpful for tracking how well you did after the fact, but they aren't designed to help you identify new promotions to run next. This existing approach is, at the very best, 20-20 hindsight. It's good for seeing where you've been, but it can't tell you where you ought to go. It's about reporting, not innovating.

In the last 15 years, a new field, called Behavioral Economics, has come to prominence. It seeks to understand people's economic decision making by looking to psychology rather than traditional economics. And it brings an exciting message: Consumers are much more complicated than previously thought, and they're moved by many things other than money. This is welcome news for brands – it means a straight discount isn't the only way to drive response and lift. But this new view also highlights what a complex world we live in: There are an infinite number of ways to frame an offer. How can we possibly know which one is best?

It's useful here look to e-commerce retailers, who have used online testing – aka A/B testing – for years to collect data to help drive higher online sales. This approach enables digital marketers to run balanced experiments to test the effectiveness of ads or website design and, based on the resulting data, to swap out less effective parts (text fonts, colors, etc.) for

more effective ones. Recently, armed with knowledge of how behavioral economics works, several leading CPG companies have started moving toward a similar testing approach for in-store promotions.

Called "offer innovation," this new method of digital testing enables companies to test offers by experimenting with different offer structures, depth of discounts, images, products, quantity, calls-to-action, etc., and collect data on all of it. The test promotions are served to small, balanced groups of real shoppers through digital platforms such as social, print-at-home coupon sites, and email, and can be redeemed in store. To shoppers, these "micro-tests" are simply promotions, but to companies they are a valuable source of customer behavior data. By testing a large number of offer variants with shoppers online, companies can get insights into which promotions drive the most consumer engagement.

Most micro-test "campaigns" are executed in about a week, delivering results with high levels of statistical significance. For example, a leading consumer goods manufacturer found that for one of its most popular products, 4 for $5 was, surprisingly, more appealing than the $3 for 3 promotion, which it had been running for years. Similarly, a national retailer found the demand for a grocery item found in every supermarket dropped 43 percent when price was raised by just one cent above a seemingly arbitrary threshold. These insights are then used to inform broad in-store promotions, including end-cap displays and promotional newspaper inserts, across brick-and-mortar retailers.

Digital testing works best in concert with existing systems and processes, injecting much-needed forward-looking insights – insights that are critical to knowing which in-store promotions will maximize volumes, trips, basket size, and ROI. Once proven through digital testing, "optimal" promotions can be added to the promotional calendar and managed through existing promotion systems. And once a promotional event is complete, post-event analysis can reveal how a promotion performed on a number of key in-store measures, potentially providing additional guidance for future testing.

However, today what we see is a process that starts where it should end. Rather than putting consumers at the center when developing new promotions, promotion discussions at CPGs have been too focused on what was run last year. Using aggregated, noisy point-of-sale data fails to take into account the nuances of consumer behavior. Two economically identical offers – such as $1 off a $4 item and Buy 3, Get 1 – are combined into a single 25 percent off data point. We now know that consumer response to different offer structures such as this can vary by 200 percent or more. So which offer would you run? ■

Jamie Rapperport, co-founder and CEO of Eversight, has 25 years of experience as a software entrepreneur. Prior to founding Eversight, Jamie was co-founder and EVP at Vendavo, the leading B2B pricing technology company. Prior to Vendavo, he served as a founder and vice president of marketing and sales at VXtreme, which was acquired by Microsoft and became the core of "Windows Media Player." Jamie has a B.A. from Harvard University and an MBA from Stanford.

Customers' Action Data Speak Loudly to Marketers

by Adam Paulisick

"I would like to reach someone who looks like a buyer but doesn't really want the product." – No marketer ever

For more than a century, demographics drove the advertising machine on an incredible journey, broadcasting to the most likely household or person able to buy a product. But now, with data-driven advertising, connected consumers, and stronger consumer protections surrounding behavior data (like retail spending habits), the industry prepares to take flight in a new direction.

Informed marketers are no longer counting birthday candles or relying exclusively on gender but instead are looking at a stack of observable moments, choices, and behaviors that tell the world the lifestyle that consumers want, the life stage they identify with, and/or whether they are a convinced consumer or a casual shopper of just about any category. Sometimes this information is delivered in such an automatic fashion that marketers don't have to do anything more than log in.

The average consumer may have laughed (or shuddered) at the logic by which marketers assigned them to segments reachable with advertising – e.g., just because they were a man or woman, rich or poor, or had one child versus two children. But it was never easy for a marketer with an ever-evolving brand story: tons of questions remained partially answered and finding the market fit for a product was an adventure. This certainly lent itself more to intuitive guessing than to fact-based science.

The good news for marketers is that the road to the consumer is no longer shrouded in such mystery. However, advertisers now have been given a dose of their own medicine, as the data bombards them with so much information that they may find themselves unsure of which path to take. The world of advertising has come face to face with the wonderful problem that big data always presents: how to make sense of it all. Behavior-based data tend to settle the confusion, and that's why today's marketers love them so dearly.

Take, for instance, a hypothetical candy brand ramping up its Halloween media spend:

Marketer A of the old-school demographics era says, "Let's get these ads in front of moms 35-54." Marketer B of the new-school demographics era says, "Sure, but perhaps not moms who live in apartment complexes. And maybe not moms of children under 3. Does their education level matter? And what was the median income of households that bought candy during past Halloweens? I wonder if we should consider grandparents who live in high-population suburban areas. And what about ethnicity? Do we have a competitive edge with any specific ethnicity?" Marketer C of the data-driven era says, "Hey, folks, let's

step back. Here are the consumers who bought candy last year at this time and have repeated their holiday buying pattern year-over-year up until this date."

Which marketer's advice feels the most intuitive to go with? It's worth noting the emerging difference that data provide in choosing the audience to be reached to help shape the actual creative or message. Marketer B may have missed the obvious flag to find candy buyers, but not the fact that the message still has to appeal to them whether it's a promotion (think discounts) or equity (candy creates neighborhood connections).

The same can be said for the candy brand's interest in launching a new flavor in time for the holiday season:

Marketer A's statement remains uninformed.

Marketer B's statement remains uninformed.

Marketer C says, "Here are the consumers who have shown loyalty to our brand, as well as consumers who show heavy category shopping patterns without brand loyalty, and have exhibited a history of adopting new flavors of the products they regularly purchase."

It seems so simple. And undoubtedly, past purchase behavior is the single most influential indicator of future purchase behavior, which is a great start in identifying relevant audiences. But going one step further, how can behavior-based data meet marketers' needs during the earlier stages of brands and in campaign execution?

As mentioned, the rumors of demographics' demise were greatly exaggerated. Creative and messaging still rely heavily on the ability to align brands with the characteristics and aspirations of consumers. Envisioning the personas of buyers at the creative stages of advertising requires a delicate technique of identifying traits backed by historical evidence. Boiled down, the relationship between demographics and buyergraphics is a qualify-and-validate process, wherein marketers use focus groups, surveys, and other time-tested mechanisms to fuel the arguments that past purchase data can either support or refute.

Let's say that candy bar Brand X is about to embark into uncharted waters with a healthy option.

Qualification: The demographic of our sweepstakes participants was overwhelmingly high-income households.

Validation: Yes, the purchase history data of a competitor's product shows that 85 percent of buyers have $100k+ incomes and that this demographic's share of the purchases has increased 20 percent over the past year.

Qualification: Organic grocery buyers identified positively with this product in our focus group.

Validation: No, organic grocery buyers have shown virtually no loyalty to candy/snack brands that have made similar alternative product introductions.

Qualification: The bulk of respondents from our survey stated that price would not be a serious consideration.

Validation: Yes, data indicate that buyers of competitor brands switch to more expensive alternatives 71 percent of the time.

Through this process, the advantages of both demographics and buyergraphics become apparent and paint a truly informed picture.

Most of your difficult choices around messaging, creative, audience, format, and placement can now be answered by your resident expert: the consumer or, at a minimum, their data. So don't forget to ask them whether they actually want to buy. ■

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Adam has a degree in Management from Case Western Reserve University in Cleveland, Ohio, and a minor in Information Systems and Data Structures. He resides in Pittsburgh, Pennsylvania, where he is an Adjunct Professor of Entrepreneurship at Carnegie Mellon University's Tepper School of Business.

Use Data-Driven Segmentation to Find Your Target Audience

by Adam Paulisick

Earlier this year, Columbia University Press released *The Insect Cookbook: Food for a Sustainable Planet*, which it touts as "The Definitive Guide to Insects as a Sustainable Food Source." While the thought of munching on a beetle or a grasshopper is likely to turn the stomach of most people socialized in Western culture, insects are, in fact, a primary source of protein in many cultures, particularly in Africa, Asia, and South America.

While it is unlikely that entomophagy—the consumption of insects as food—is going to take off in America any time soon, there are some compelling benefits to eating bugs: they are high in protein, low in fat, and eco-friendly to farm. It's not hard to imagine the possibility of a niche market developing among more adventurous, health-conscious consumers—and there are a lot of hipsters in Brooklyn and San Francisco.

So let's assume you are a more adventurous marketer, or have a more adventurous client. Marketing insects as food to Americans presents an interesting conundrum: How do you find the most receptive audience for such a radical message? Segmenting consumers by age and gender or other demographics is inefficient at best, even for more traditional marketing campaigns because there are no hard and fast rules anymore for what a man or a women will intuitively buy (with few exceptions). The ability to purchase just about anything advertised has virtually no barriers except preference. Furthermore, there simply isn't a demographic for bug consumers in our culture. So what's a marketer to do?

The good news is that you don't have to guess. Data-driven segmentation can be the key to identifying an audience you are trying to reach.

Here's a quick guide to what types of data tend to inform audience segments:

Store-level: Derived from credit cards, loyalty cards, and other retailer-centric data, spend levels help an advertiser understand the locations where consumers are likely to interact with the product in addition to price point, selection, and the competitive landscape to which they could be exposed. Store data is often used when seeking the heaviest retailer-specific buyers: heavy shoppers of Best Buy to present Black Friday deals, for instance, or perhaps heavy Target shoppers if the retailer wanted to alert their most loyal audience that a new department, event, or offering was coming.

Cart/Basket-level: Again, typically derived from payment method, cart/basket-level data allows an advertiser or retailer to better understand the department in which the shopper spends regularly. This would be an opportunity for someone to be placed in a "heavy cookware/accessories" segment in addition to retailer preference. Basket-level data is

especially helpful for mass merchandisers (online or brick and mortar) that offer an almost endless selection of products across hundreds of categories.

SKU-level (Stock Keeping Unit): A reference that allows a retailer to keep track of groups of items independent of the universal way the manufacturer references them across retailers. In this case, someone who had access to the retailer's inventory or point-of-sale information would be able to add a consumer to a segment such as "buyer of exotic cookbooks" in addition to retailer type and category information.

UPC-level (Universal Product Code): A reference so specific that a retailer can understand the exact type of grooming product, gaming console, or exotic cookbook (such as protein from creepy crawlers) purchased, or other specific variants that align to the most surgical advertisements.

No matter what type of data, the concept of historical purchase affords the advertiser confidence in not wasting impressions on someone who isn't interested in the subject matter. It's worth noting, however, that it doesn't make it any easier to find the perfect creative fit, message, or tone in isolation.

So in the case of our cookbook, being integrated closely to a retailer's point-of-sale system, you can glean endorsements, ingredients, and other factors in your consideration of how to construct the perfect audience segment. Don't worry if you don't foresee yourself advertising bug sandwiches anytime soon. In more traditional terms, marketers are constantly building campaigns around factors such as ingredients, heart health factors, packaging, fair trade, or quite literally anything else listed on or about the product.

Moving beyond just collecting the right data, here are a few ways to use consumer retail sales data find that insect-receptive audience:

Use companion products to identify American bug eaters. Because health and ecology are at the center of the entomophagy value proposition, marketers could serve their campaigns to audiences that are predisposed to low-fat, high-protein foods such as soy, black beans, and lean meats. I see this approach frequently. For example, brands that provide allergy remedies look for consumers who are heavy buyers of tissues when the direct knowledge of a consumer's allergy condition is less than clear.

Avoid the non-category buyers. Because eating bugs would (initially) be considered completely outrageous in Western society, it's all the more likely to become a fad among the trendy and health conscious. Nothing screams trendy and health conscious more than heavy buyers of the trendiest produce of the last five years, such as kale and acai. So, clearly, these are consumers to target with the insect-eating message.

But this principle also works in reverse. Frozen food or travel-size product companies would likely avoid those same consumers, as they know that items that expire frequently are clearly not the ideal indicator of consumers who are on the go or are less concerned with fresh products. Although it's tempting to look at what someone does as the only indicator

in addressable media, eliminating the very unlikely buyers might actually be a better way to increase the efficiency of the media spend.

Use lifestyle elements to enhance your purchase-based audience segment. In addition to nutrition, advocates of bug-eating cite the ecological benefits of consuming insects, pointing to the low carbon footprint of farming bugs. Another segment of consumers that may be receptive to the idea of crunching crickets could be households that purchase organic, earth-friendly food, household products, and health and beauty aids.

When attempting to market an unusual or niche product, use your data to segment the audience to identify customers who might be most receptive to your message and eliminate those who would not. Find the companion products, avoid the non-category buyers, and remember that lifestyle can complement past purchase history. ■

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Understanding the Coming Age of the Customer

by Allen Bernard

Although a lot is made of companies' putting the customer first, the day is coming when the customer truly will be king. It all comes down to data.

"Think about the massive explosion of data and analytics," said author and Executive Director of the Center for Information Based Competition John McKean. "Think about that. We have three Vs of variety, velocity, volume, all that incredible data that business intelligence, CRM, mobile apps, Internet of Things, cloud, wearable technology. All of this stuff is absolutely changing how we operate as a business today." McKean spoke, along with co-presenter and retired Teradata marketing director David Schrader, at Teradata's recent customer conference in Nashville.

"What is your critical value composition today?" asked McKean. "How would perfect information change that? Because in 10 years, we're going to have close to perfect information if we are good at motivating (people to give it freely) and protecting (their data). How is that going to change your performance metrics?"

Data is a multi-billion dollar business in the United States and, at some point, consumers will realize that their information has value and that it belongs to them, not the companies that collect it. (The winds of this change are already blowing, as recent court rulings in the EU have shown.) When this happens, power will shift from the corporate marketing departments that currently control what products people buy to the individual. This is what McKean calls the direct voice of the consumer.

Factors influencing this shift include the following:

- Smart devices will have immense storage capabilities sooner rather than later, giving people the ability to store all of their own data and carry it around with them
- Revelations about spying by the U.S. and foreign governments has opened many people's eyes about the information that is being collected about them
- Courts are siding with individuals when it comes to who controls their data
- Companies are finding it more challenging in today's Internet-enabled business landscape to establish long-term customer relationships

The explosion of data McKean spoke of is enabling two things:

1. Companies are marketing to individuals much more successfully because the intelligence gleaned from data enables them to offer personalized discounts or just-in-time offers based on people's geo-location data. At Virgin Atlantic, for example, if the company books your rental car, the car is tuned to your preferences so you don't have to set up anything, such as GPS.

2. Also, consumers will be empowered to shop for goods and services in the same way that business do: They make their needs known, and vendors compete to meet those needs. This paradigm, called event-based marketing, is how McKean and Schrader believe people will buy things in the future.

"Ramification number two has to do with this change in marketing, which traditionally has been push-based marketing," said Schrader. "Some master of the universe behind the scenes comes up with a marketing campaign, segmentation, (and) pushes the message out through different channels. If you watch a few Teradata marketers, you know that event-based marketing, when you create a campaign and you wait for an event to happen, then that triggers a step-by-step reaction from the company. This area of consumer intelligence is going to take you to the very next level."

Teradata's unified data architecture is designed to handle this eventuality so that companies, when alerted to a consumer's need through some channel or other, can jump into action to win that customer's business. This is the same concept as reverse auctions.

"If you don't know that vocabulary, you should look it up on Google because that's going to be what a lot of this stuff is," Schrader said.

In this new world, the consumer controls the entire buying process. Companies are relegated to a fulfillment role based on winning a customer's business. To do this effectively, companies will need to develop and deploy listening apps that collect information and do real-time bidding evaluation to decide if they even want a person's business.

"What that means is now, from the end perspective, you'd better have listening apps out there that are collecting the information, pulling it into your (EDW) system and doing new real-time bidding evaluation," said Schrader. "It could be you were my carrier, now you are shocked that I am in the market. Maybe you wanted to give me a good deal, maybe I don't pay my bills on time, maybe you don't want to bid on this."

However the next generation of buying and selling unfolds, the combination of mobile and big data analytics is having the same impact on commerce that the Internet had 20 years ago. And, like that time, few can imagine how dramatically entire industries are about to change. How data is going to combine with technologies like mobile to upend the established order is anyone's guess. The only thing that is certain is that change is coming. ■

Now a freelance writer, in a former, not-too-distant life, Allen Bernard was the managing editor of CIOUpdate.com and numerous other technology websites. Since 2000, Allen has written, assigned and edited thousands of articles that focus on intersection of technology and business. As well as content marketing and PR, he now writes for Data Informed and other high-quality publications. Originally from the Boston area, Allen now calls Columbus, Ohio, home. He can be reached at 614-937-2316 or abernie182@gmail.com. Please follow him on Twitter at @allen_bernard1, on Google+ or on LinkedIn.

Customers View Loyalty Programs with Caution

by Joshua Whitney Allen

Despite the million-dollar data breaches and the flurries of panic, consumers continue to engage in the information economy, albeit with a mix of commitment and caution. That caution makes a majority of consumers reluctant to join one of marketing's biggest data-generating mechanisms—the loyalty program—to the detriment of their own customized shopping experiences and, for companies, millions in repeat business opportunities lost.

The risks of modern times are leading buyers to hold back their participation in loyalty programs. Many people are willing to turn over personal information, travel details, demographic data, and more in exchange for perceived value. But according to a recent report by marketing firm Aimia Inc., there is so much more data that could be captured if more buyers could be coaxed into loyalty program participation. Marketing departments must find a way to convince more customers of the security of such programs if they want to gain the full rewards of long-term relationships—rewards that include rich, incisive data on customer habits and preferences.

"There's an unknown to the consumer as to what the company is collecting," said Erin Raese, Chief Operating Officer of industry group Loyalty360.org. "(People ask) 'What are they watching? If I buy my wine each week, are they deeming me an alcoholic?'

"There is an education that is needed," Raese continued. "I don't think any company wants to creep you out, but at the same time, the consumer—especially the younger generation—wants the company to understand what (the consumer) wants. They expect you to give them a relevant message."

Aimia's Loyalty Lens report showed the willingness and hesitancy of people who must consider the deep consequences of stolen pedigree, financial, and location information. When asked to rank types of businesses by the degree to which they are comfortable with those businesses handling an individual's personal data, an overwhelming majority of consumers – 82 percent – ranked banks, supermarkets, mobile phone providers, and their places of work highest. Ranked among the lowest for this measure were online search engines, identified by 65 percent of consumers, and social networks, chosen by 58 percent of consumers.

The numbers sound a refrain that has appeared, again and again, in polling of buyer attitudes toward the plusses and exposure of loyalty programs. Recently, Deloitte found that 75 percent of travel customers expect their loyalty programs to have same security standards as financial institutions. Yet only 33 percent felt these programs are secure.

Last year, roughly 1.5 million customers were compromised in a breach of Irish firm LoyaltyBuild, which handles loyalty programs for travel companies.

In a study by Safenet, 65 percent of roughly 4,500 respondents said they are unlikely to do business with a company that experienced an incident in which credit card details, bank account numbers, or online banking login data was stolen.

Of all the channels companies can use to achieve a tangible link to the buyer, loyalty programs offer a stream of fulfilling, mutually beneficial, and profitable interactions. They also offer valuable intelligence on the motivations of the buying public.

"Organizations are looking at aggregate information to watch trends and they watch transactional behaviors—what are you buying, how often, how much are you spending?" said Raese. "They can then respond to changes in the relationship."

As the survey suggests, bank loyalty programs are able to assure customers that their information, their accounts—their whole lives—will not be compromised.

In a 2013 forecast for retail bank loyalty revenue, research firm MarketWatch noted that banks turned to low-cost marketing programs during the financial recession that began in 2008. Loyalty programs—marketed through inexpensive social media and mobile apps—drew in customers who were otherwise skeptical of a financial system that left millions to foreclosure, debt, and unemployment.

"Banks incur costs when offering loyalty programs," stated MarketWatch. "To reduce these costs, they build coalitions with merchants and retailers to collectively share the operational, branding, and marketing expenses. From the customer point of view, the coalition enables them to earn and redeem reward points across a network of merchants as well as be entitled to program-specific rewards."

Other industries are enjoying profit growth and a data harvest from loyalty programs. According to The Boston Consulting Group, nearly 40 percent of restaurant loyalty program members increased the frequency of their visits after joining full-fledged programs. As quoted in QSR Magazine, "Loyalty programs give operators direct insight into what guests think about their menu items, staff, and overall quality of service before, during, and after the dining experience," said David Andreadakis, vice president of loyalty strategy for Florida-based Kobie Marketing. "And from this collected data, operators can even evaluate the company against key performance indicators to determine how their loyalty program impacts the restaurant's reputation."

"Retailers know that this is important," said Raese. "They have to keep things secure, no one is taking data lightly—everyone is asking how do I market to these people effectively but how do I keep them safe?" ■

Joshua Whitney Allen has been writing for fifteen years. He has contributed articles on technology, human rights, politics, environmental affairs, and society to several publications throughout the United States.

Use Predictive Modeling for Back-to-School Retail Success

by Sid Banerjee

Back-to-school season is here and, thanks to a weak first half of the year for retailers, it's holding a little extra significance. A harsh winter cooled off retail sales early on in 2014 and caused the National Retail Federation to lower its full-year forecast. Still, the second half is supposed to regain some strength – thanks in part to an increase in back-to-school shopping. According to the NRF's annual survey, total spending on back-to-school items is expected to reach $74.9 billion—up from $72.5 billion in 2013.

To be successful in this crucial and competitive period, retailers must make sure they are up to date with the latest analytics technology. Making customers happy – and, in turn, making them buy – is obviously key to a successful back-to-school season. Luckily, data about social media sentiment, call center feedback, buyer behavior, survey responses, sales, and more all hold clues as to what's needed for a successful back-to-school season, from the right marketing campaigns to the right product mixes and everything in between.

Of course, there are different types (or levels) of retail analytics to this end. The most basic type is a simple volume assessment of your data, which involves counting the occurrences of issues and taking action as the volume and importance increases. The next progression is change analysis – that is, looking at the rate of change in the data, including spikes, and then determining the next best action based on dramatic increases.

But the most effective and advanced analytics – and those that have the most impact on back-to-school success – use all your data sources for predictive modeling.

By using retail analytics for predictive modeling, companies can actually see and understand how sentiment, emotion, and actions have changed; determine what is influencing that change; and make adjustments as needed (preferably in real time). This can take place at both a trend level and an individual level.

With that in mind, let's take a look at four specific ways that this advanced level of retail analytics can be employed this back-to-school season.

1. Perfecting promotions.Customers are constantly giving feedback – in the actions they take, in the words they use to describe a store or company on social media and review sites, and in the words used in survey responses and call center interactions. By pairing data on customer behaviors with feedback, retailers can understand the root causes of buyer behavior.

For example, let's say a retailer noticed that fewer customers were talking about their coupons and redeeming them less during this back-to-school season than in previous years. The basic level of retail analytics would alert the company to this difference. But by digging deeper into the data, the retailer could figure out exactly why – whether it was because of the checkout process, or because the coupons were expiring too quickly, and so

on. Armed with this data, the company can then make an adjustment to make the coupons more effective for the remainder of the shopping season.

2. Preventing showrooming. Retailers know that customer loyalty is important and listen very carefully to loyal customers. But many retailers don't understand why certain shoppers don't buy their products and why showrooming occurs. Once again, this data can be found on Twitter, Facebook, and fan forums. When monitored in real-time, retailers can determine if there is a problem with the product, the staff at a location, the pricing, or even the merchandising – and then make the necessary adjustments to solve the problem.

3. Adjusting the product mix.Another key part of retail analytics involves looking at historical customer feedback, whether from recent months and campaigns or from previous back-to-school seasons, to plan product mixes and pricing, anticipate changing customer demand, and more. To dive a bit deeper, this kind of predictive modeling means comparing historical trends with current trends and look for changes in rate, or the standard deviations. This is especially the case as the back-to-school shopping season starts earlier and earlier each year. As that trend takes place, retailers can analyze sales of specific products and adjust their orders as necessary. For example, let's say Target notices that its sales of glue sticks were trending up early in the month. It can use that information to adjust its plan and determine which stores need re-orders.

4. Real-time response. Once again, predictive modeling can take place at a more individual level, allowing retailers to target specific customers in real time to improve sales. For example, retailers can use data to identify upsell opportunities or predict (and hopefully prevent) churn. And online retailers also use predictive modeling on a more individual level. They can use a combination of demographic data and activity to help the shopper to have a better omni-channel experience. For example, demographic data may show the retailer that a woman is a mother living in the suburbs, and her search activity may show that she is looking for kids' shoes. Online retailers can use that information to predict that the mom also might need school uniforms and make those easier to find on the website. Similarly, real-time response and predictive modeling includes monitoring for abandoned online carts and comparing abandonment rates to previous rates – and then, of course, figuring out why the rate has changed.

Predictive modeling can play a key role in retail analytics, allowing companies to detect changes, model trends, and act on that information to improve the customer experience and customer loyalty and, in turn, improve sales. ■

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How Smaller Merchants Can Take Advantage of Big Data

by Kevin North

Big data has subtlety entered the e-commerce community without providing much direction to smaller merchants. While Amazon, Rakuten, Alibaba, and other giants consolidate their lead with investments in supply chains and logistics, small merchants can survive and prosper through the winds of change by using the insights derived by e-commerce data.

I recommend that smaller merchants use data to gain an advantage in three specific areas: consumer demand, sourcing, and market timing. It's nearly impossible to compete with major retailers on price or shipping unless you can use data to improve your margins in each of these areas.

What to Sell?

As a seller, your first task is to decide what you are going to sell, and data should be central to this process. Whether you are on eBay, Amazon, or any other platform, you need to study the market for viable profit opportunities. Tools designed to analyze big data can tell you what these are.

For example, if you look at marketplace data for merchandise related to Disney princesses (they account for millions of dollars in eBay sales), there are windows when the market is ideal. Disney's latest hit movie, "Frozen," featured the Disney princesses Anna and Elsa. Just after the movie appeared in theatres, sales of related merchandise grew quickly and then fell off with the post-holiday slump. However, the DVD release of "Frozen" in March caused sales to explode. The Disney princess window is short, yet other Disney characters had relatively lackluster sales volume during that same period.

So when Disney creates a blockbuster success, the princesses are great product opportunities – at least for a few months. If you are determined to sell Disney princesses all year, try Snow White, Ariel, and Cinderella.

Sourcing in a Global Marketplace

You also should be using big data tools to source and price goods effectively. The United States, still the world's dominant e-commerce market, is hooked on imported goods. To be competitive, you'll often need to source goods from cheaper labor markets because most Americans prioritize prices and shipping times over Made in America labels. You can't compete with big retailers on pricing or shipping without smart sourcing. Good sellers understand that margins are made in the sourcing process. So understanding a product's true value right from the start, using big data, is the difference between good decisions and bad decisions – i.e., an informed purchase leading to a profitable sale versus an emotional purchase leading to excess, unwanted, or non-profitable inventory.

With goods like smartphone charger cables, for example, there is a surplus of sellers and the margins are razor thin, so merchants that source most effectively can dip pricing below the average or include faster shipping at the same price. Likewise, the Disney princess dealer who sources most effectively and is therefore able to offer better pricing and shipping options will have much better odds of capturing the market.

Figure out what prices you can profitably sell at before following through with your purchase in the sourcing process, and model several different buy-and-sell scenarios using empirical data (empirical data from big data, if you can imagine that). For example, a merchant who wants to sell iPhone cases on eBay should examine selling prices, sell-through rates, listing durations, total sales, top keywords, and other key data points that can provide supply-and-demand characteristics. These numbers will tell you if you can make a profit sourcing at the price offered by the manufacturer.

Nailing the Timing

Once you know what to sell and how to source it cheaply, you should work hard to take advantage of cyclical events. The common thread among all e-commerce markets is that they change over time, often in predictable ways. You'll gain a strong competitive advantage if you are able to understand shopping cycles and time your selling accordingly. Big data shows you when shoppers are most likely to buy particular kinds of products.

For instance, the rise of the Do It Yourself movement has brought renewed interest in cooking and cookware. Over a two-year span, the cookware category shows consistent increases in sales volume.

When you look at data for more specific items and shorter time frames (hours, days, weeks, and months), you can spot more actionable trends. It should come as no surprise, for example, that sales of woks spike after Thanksgiving, but why was there an enormous spike in wok unit volume in early August 2013? It could be that the Qixi Festival, also known as "Chinese Valentine's Day," fell on August 13, 2013. This year it falls on August 2. I imagine we'll see this trend repeat itself.

I cannot stress enough how much delivery times and pricing now influence consumer preferences. If you sell online, you are being compared with dozens of other merchants. If you want to compete on shipping and pricing, you must use big data to improve merchandising, sourcing, and timing.

Everyone knows that big data is playing a large role in ecommerce. As a merchant, you must decide what data and trends are worth following. Certain patterns can give you a competitive advantage in specific markets. Pick out the trends that matter to your business, and follow them consistently. ■

Kevin North is the CEO and President of Terapeak, a leader in commerce market analytics, dedicated to helping online merchants grow their businesses and become more profitable.

Kroger Streamlines Operations, Improves Service with Analytics

by Allen Bernard

The largest supermarket chain in the United States, Cincinnati-based Kroger, is using data and analytics to improve operations, cut costs, and increase customer satisfaction.

The grocer began using analytics to evaluate and improve operations in 2007, when it put together its first operations research team. The team consisted of mathematicians, MBAs, former Marine helicopter pilots, and a guy who used to shoot down missiles for a living. Today, the team is focused on how to move people through stores faster, improve customer service, and optimize warehouse layouts.

In 2010, the team implemented a project aimed at in-store pharmacies that would cut down on out-of-stock items, improve the customer experience, save money, and increase revenue. To date, they have reduced inventory by $120 million and the number of out-of-stock prescriptions by 1.7 million.

"So that's 1.7 million more customers walking out the door with a script," Doug Meiser, Kroger's Operations Research manager, said at the University of Cincinnati's Analytics Summit 2014 in May.

This effort has realized $10 million in annual savings and $80 million in increased revenue.

But perhaps the group's biggest breakthrough is QueVision, a data analytics package that combines historical shopping data with real-time information about the number of customers in the store and infrared camera technology that counts the number of people waiting in line. Once certain thresholds are reached, managers are alerted to open new checkout lanes.

The project started because of a single line item in a project about how they could scan items faster at checkout.

"We put a little flag in the model that said 'dynamic lane planning,' " said Meiser. "It was more of a curiosity than anything. What would happen to our labor if we could open up a lane exactly when we needed it? And how would that impact customer service and labor?"

The answer to labor question was: Not much. Using QueVision to determine when to open checkout lanes did not impact their employees' ability to do their jobs effectively. The answer to the customer-service question was: A lot.

"By being able to do that prediction, we can get our customer wait times down to 30 seconds [from four minutes]," said Jim Holtman, the former missile-man turned operations analyst.

Once management saw the benefit of the technology, it was very quickly rolled out to all 2,400 of the company's stores.

While improving customer wait times is important, managing the back-end operations that move products from warehouse to store is a far more daunting challenge. The company has been working for years on how to design its warehouses so products can be picked and palletized in a way that is logical at the store level.

Except for a few recently optimized facilities, distribution centers are currently designed in a way that is warehouse-centric. As a result, a single pallet could have items on it that go into many different areas of a store. Compounding the problem is the fact that each distribution center is unique and that not all stores share the same layout.

"The basic cause of the problem was local optimization – how to put the pallets together neatly," said Holtman. "So I put a case of corn, dog food, and baby products on the same pallet … And the stores were laid out in the way the customer shopped."

The way customers shop is by looking for related items, not related sizes. So corn, dog food, and baby products frequently will not be shelved near one another in the store.

A typical store receives between 15 and 20 pallets per day. Multiply this by 2,400, and the scope of the problem becomes clear.

"What we really want to look at is the relationship between the products in the store – how far apart are they?" said Holtman. "This is where cluster analysis comes in very handy. It helped us figure out how things need to be grouped."

Holtman has worked with around 20 different distribution centers, each different from the others. In only one instance was he able to work with a warehouse under construction. Most of the time they are trying to optimize a warehouse's layout while it is in operation. This is where the real challenge lies, he said.

"The analysis is easy," he said. "A lot of this stuff is just math. I know from experience the math I used to do large-scale [missile intercepts] works very well to redo distribution centers." ■

Now a freelance writer, in a former, not-too-distant life, Allen Bernard was the managing editor of CIOUpdate.com and numerous other technology websites. Since 2000, Allen has written, assigned and edited thousands of articles that focus on intersection of technology and business. As well as content marketing and PR, he now writes for Data Informed and other high-quality publications. Originally from the Boston area, Allen now calls Columbus, Ohio, home. He can be reached at 614-937-2316 or abernie182@gmail.com. Please follow him on Twitter at @allen_bernard1, on Google+ or on Linked In.

Brick and Mortar Retailers Enlist Real-Time Analysis to Counter Online

by Cindy Waxer

Twenty years ago, when Amazon was still a little-known online bookseller, no one could have predicted that brick-and-mortar (BAM) behemoths would one day look to online outfits for guidance on how to attract and retain customers. Yet that's exactly what's happening as BAM retailers struggle to survive.

As more and more consumers turn to smartphones to compare prices, research products and make purchases, in-store traffic is tapering off. Shopper and store traffic analytics firm ShopperTrak estimates that, during the 2013 holiday shopping season, retail foot traffic decreased 14.6 percent compared with the previous year. Conversely, with etailers now offering easy product returns and free shipping, web sites are experiencing strong growth, including a 10 percent increase in online spending during the 2013 holiday shopping season, according to ComScore.

Hoping to recapture these browser-bound consumers, many BAM retailers are rolling out in-store analytics systems. For years, online retailers have relied on analytics engines to capture consumers' buying patterns, identify shoppers' preferences and make purchasing suggestions as they browse the web. However, up until now, gathering information on customers as they weave through store aisles has proved more challenging.

But all that stands to change as a new crop of technologies promises to help BAM retailers better cater to customers' needs in real-time via smartphones and interactive devices.

ScaleOut Software is one player whose Analytics Server product combines an in-memory data grid with an analytics engine to deliver near real-time analytics for in-store shoppers. Currently, there are a handful of ways for BAM retailers to simulate the online shopping experience. These include point-of-sale systems that alert an analytics engine when a customer enters a store and opts in to a mobile app, RFID tags that allow shoppers to scan an item for real-time information such as warehouse availability, and tablet-toting sales staff who need only enter a customer's information to receive real-time purchasing recommendations based on that customer's previously recorded buying behavior.

Although these approaches vary, each one requires an analytics engine capable of handling large data sets quickly. ScaleOut's Analytics Server accomplishes this by storing live data within an in-memory data grid rather than on an external storage resource such as a hard disk. In addition to storing vast amounts of data, an in-memory data grid allows for the spreading and sharing of data across a cluster of servers. As a result, retailers are able to pull data like buying history from secondary storage while simultaneously managing an incoming stream of real-time information for millisecond-speed analysis.

"By holding data in-memory, [BAM] retailers can handle larger workloads of data and dramatically drive down the time it takes to get results," said Bill Bain, founder and CEO of ScaleOut Software.

Relying on a cluster of servers also guarantees high availability for the analytics processing itself, as well as the ability to recognize if a portion of the analytics process failed and therefore needs to be re-performed on another set of servers.

eyeQ is another vendor that's helping retailers reinvent the in-store shopping experience and better compete with online retailers. The company has created an interactive touchscreen display that can be strategically placed throughout a retail store. The device relies on an on-board camera combined with video analytics to plot the points of a consumer's face in order to approximate age and gender, measure lingering time and assess a shopper's mood based on facial expression. Using this real-time analytics data, the display then delivers relevant and targeted content, from customer reviews and product recommendations to in-store discounts.

"What the BAM retailers want to be able to do is learn about shoppers in-store and deliver in real-time some kind of a targeted message that allows them to compete with online retailers," said eyeQ's CEO Michael Garel. "What online retailers have trained shoppers to expect in the online realm, we help bring to a physical setting."

Although its displays are still in beta testing, eyeQ has already had to migrate from a SQL environment to a MongoDB cloud-based hosting platform.

"We were collecting way too much data on shopping behavior and SQL just couldn't handle it," said Garel.

Another challenge for eyeQ is quickly building upon its product line of analytics solutions. For this reason, the company signed up to be a pilot customer of IBM's BlueMix. The new platform-as-a-service lets eyeQ's developers build in-house apps and products and get them to market fast. In the past, Garel said, eyeQ allocated four hours a month to server maintenance, security path updates and software updates just to ensure the smooth operation of its data analytics tools – tasks that BlueMix has eliminated, thereby allowing for more product development and less provisioning of servers. What's more, Garel said that as eyeQ begins crunching greater volumes of data, "adding memory to a server will be a click of a button as opposed to completely reprovisioning a server."

Despite the cool quotient of in-memory-supported analytics servers and touchscreen displays, BAM retailers still have a lot of ground to cover before they'll be able to simulate the intuitive customer experience provided by tech titans like Amazon. After all, said Garel, "Ecommerce has lots of ways of collecting, analyzing and influencing behavior that the brick-and-mortar channels don't." ■

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Mobile Offers Big Data Opportunity for Brick and Mortar Retailers

by Alex Romanov

Online merchants are cashing in on Big Data, using analytics to generate incredibly valuable consumer insights. According to The Financial Times, retail giant Walmart parlayed Big Data insights into a 10 percent to 15 percent increase in completed online sales, netting an astonishing $1 billion in incremental revenue.

Until recently, brick-and-mortar operations found it difficult to replicate that success, partly because there were fewer opportunities to capture data during offline shopping. But thanks to the ubiquity of always-on, always-connected mobile devices, it's now more possible to collect and apply Big Data in an offline retail environment.

In the retail sector, Big Data typically includes all the consumer data that companies can gather and process. Big Data is drawn from a near-limitless variety of sources, including online browsing and buying patterns, PC-generated information about online shopper locations, cash register receipts, data that companies purchase from third-party analysts, and other sources. Finding the right mix of data is akin to adjusting a recipe for individual tastes: Depending on a company's target audience and unique sales and marketing strategy, one blend of sources may work better than another. For example, an online retailer looking to increase revenue from existing customers would benefit from loyalty program membership data to get a clearer picture of customer preferences. A campaign focused on new customer acquisition might rely on data generated by third parties.

Now there is a new data source: data collected in stores from mobile phones, which I refer to as "clean data" because it is stripped of identifying consumer information. It is generated by proximity marketing technologies that collect Bluetooth and Wi-Fi signals from consumers' mobile devices to anonymously gather shopper information like what areas of a store customers visit, how long they stay, whether they accept or decline digital offers – all without compromising consumers' privacy.

Because clean data collects only the device signal without gaining access to identifying consumer information (such as phone numbers, contacts, etc.), it protects consumer privacy. And because it gives consumers the opportunity to accept or decline offers like electronic coupons, any direct commercial contact occurs only after obtaining consumer consent. The use of familiar technologies, such as Bluetooth and Wi-Fi, which are known by most consumers to be mature technologies with a low risk of hacking, and the active affirmation requirement can inspire greater consumer confidence than passive data-collection techniques that gather identifying consumer data without active shopper consent.

Clean data collected in-store has the potential to upend established notions about customer behavior within brick-and-mortar establishments in the same way that

advanced analytics of web site visitor behavior changed the way e-commerce strategies are developed and executed. It provides insights such as which offers shoppers find most attractive, what areas of the store are most productive, how shoppers interact with distinct media elements and how much time consumers spend in the store. It gives brick-and-mortar retailers information that helps them refine offers and accurately gauge and respond to customer preferences and behavior in real time, enabling stores to cultivate and manage customer relationships in the same way that companies like eBay and Amazon influence customer relationships and buying behavior.

So how much are insights like these worth? Working with proximity marketing specialist iSIGN Media, Dr. Jeff Tanner of Baylor University's Hankamer School of Business estimates that clean data is worth approximately $0.20 per unit of insight. However, when combined with other data categories, such as cash register information, the value can be increased exponentially by giving merchants a 360-degree view of customer behavior – online, on mobile devices and in stores.

Big Data-generated business intelligence has already transformed the way successful companies develop and execute online advertising and e-commerce sales strategies. And as the volume of data continues to increase exponentially across both the online and offline spheres, brick-and-mortar merchants will begin to generate profitable insights from Big Data.

And because clean data delivers insights without compromising consumer privacy, it helps merchants avoid controversies in an environment marked by heightened privacy concerns. A valuable commodity in its own right, clean data can be combined with other data streams to deliver even more detailed insights – and opportunities for merchants to generate additional ROI. ■

Alex Romanov is President, CEO and a director of iSIGN Media.

Data-Driven Location Choices Drive Latest Starbucks Surge

by Malcolm Wheatley

Starbucks began 2013 in style, announcing last week that it would be opening its first store in Vietnam next month, located in Ho Chi Minh City. But while the new store is the company's first opening in Vietnam, it's far from its first in Asia.

By the end of this year, said Starbucks management at the company's biennial investors' conference in December, the world's largest coffee house company will have no fewer than 4,000 stores in the region—including around 1,000 in China, 1,000 in Japan, and 500 in South Korea. By 2014, in short, China will become Starbucks' second-largest market outside of the United States—impressive for a market that it entered for the first time in 1999.

Predictably, investors and analysts have applauded such statistics as signs that the company's heady expansion in recent times could be maintained: operating income has grown at a heady 32 percent compound annual growth rate over the last five years, prompting skeptics to believe that a slowdown in sales and income growth is all but inevitable.

"Starbucks will have more than 20,000 retail stores on six continents by 2014," company chairman, president and chief executive officer Howard Schultz reassured investors. "We have challenges, we have issues, but we've never been in a better position in terms of the strength and power of the Starbucks brand."

But the challenge, as Schultz noted, isn't in penetrating new Asian markets, but delivering solid growth in more saturated markets. And saturated markets don't come more laden with Starbucks stores than the United States, where investors were told that 1,500 new stores would be in place by 2017—just five years away.

The risks are obvious. Cannibalization of sales through existing stores, certainly. Brand fatigue, possibly. But also another episode of the sort of abrupt reversal and retrenchment that the company was forced to undergo in 2007 and 2008, when Schultz came out of retirement to close hundreds of stores and restore the company's luster.

For with the benefit of hindsight, reckon both Starbucks officials and observers, it's clear that many of those stores should never have been opened in the first place.

"The majority of the stores that Starbucks closed in 2007 and 2008 were stores that it had opened in the previous eighteen months," says Starbucks watcher Craig Garthwaite, assistant professor of management and strategy at Northwestern University's Kellogg School of Management. "It seemed that they were opening stores just for the sake of opening them—even where there wasn't a profitable opportunity."

Geographic Data Directing Store Site Selection

This time it will be different, vowed Schultz, explaining that a more disciplined, data-driven approach to store opening had produced very different results over the past two years.

In short, he said, the store openings classes of 2011 and 2012 had produced some of the best unit economics in the history of the company, with a sales–to-investment ratio of 2:1, very strong compound growth, and average per-store volumes at record levels.

Figures highlighted by Cliff Burrows, Starbucks' president of the Americas and United States, for instance, showed new U.S. stores delivering first year sales of $1,052,000, versus a target of $900,000—and costing on average $494,000 to build (the 2:1 sales-to-investment result).

"In 2007 and 2008, the growth of Starbucks was undisciplined, and growth was more of a strategy as opposed to an outcome," acknowledged Schultz during the conference. "You'll hear [us] talk today about accelerating the growth of our United States business, and opening up at least 1,500 new stores over the next five years in the United States alone. And we strongly believe that as a result of the demography, the data, the science and the experience we have, that these locations in the returns will mirror what we've been able to accomplish in 2011 and 2012."

For "demography, data and science," read the company's investment in location analytics tools from market leader Esri.

A longtime user of Esri's Geographic Information Systems (GIS) technology, Starbucks began using GIS technology and data in the late 1990s, Starbucks manager of global market planning Patrick O'Hagan told delegates to the 2011 Esri Business Summit, held in San Diego, and attended by 200 business executives from all over the world.

So unavoidably, GIS analytics technology is implicated in the 2006 and 2007 opening of stores that were subsequently closed—which O'Hagan acknowledged, referring to the then-practice of the company's GIS staff flooding Starbucks staff members with data, especially those working with real estate.

"We put the buggy before the horse," he said. For while Starbucks staff had access to massive amounts of data, they had no way to easily analyze it.

Different Approach: GIS Data in the Hands of the Right Users

At the 2011 Esri conference, O'Hagan said that a different approach prevails: instead of delivering a flood of data, the GIS team provides analytics and business support to its real estate section, using Esri's ArcGIS for Server solution to create data-rich applications that staff members can access from desktops, the Internet, and mobile devices in the field.

"Our people don't want to know what GIS means or what it can do," explained O'Hagan. "They care about functionality, speed, and convenience. ArcGIS allows us to create replicable consumer applications that are exactly what they need."

So where exactly will Starbucks put its 1,500 new stores—and how will it avoid having them cannibalize sales of other existing stores? Starbucks declined repeated requests for an interview.

But CFO Troy Alstead, again speaking to investors, provided a clue, referring to a deliberate strategy of pinpointing stores—including drive-throughs and smaller stores—in locations that were more convenient for customers.

"We have more discipline and rigor around new store development and the monitoring of new store performance and returns, today, than we ever have before," Alstead said. "The most recent class of [newly opened] stores, particularly in the Americas, have consistently produced great returns, exceeding our hurdle rates."

And for Kellogg's Starbucks watcher Garthwaite, statements like that are indication enough of a sea change in thinking, and of the proactive role played by analytics in determining store locations.

"This focus on the profitability of individual stores is a big step forward from 2007 and 2008," he notes. "Management are adamant that they're not growing for the sake of growing, and that they're focusing on the individual profitability prospects of each newly-opened store, and not assuming that just because they're Starbucks, stores should succeed anywhere." ■

Freelance writer Malcolm Wheatley is old enough to remember analyzing punched card datasets in batch mode, using SPSS on mainframes. He lives in Devon, England, and can be reached at editor@malcolmwheatley.co.uk.

Retailers Use Analytics to Freshen Up Customer Loyalty Programs

by Mindy Charski

Attracting new customers is much more expensive than retaining them. Those really in love with brands are apt to become vocal advocates, and devoted customers are spenders.

Yet, customer loyalty is becoming harder to win. The Web is making it easier than ever to compare deals and experiences, and lower prices and negative chatter can make an otherwise faithful customer stray. Also, many loyalty programs aren't satisfying customers: A 2012 study from the analytics firm ClickFox found that 63 percent of consumers surveyed do not believe companies are doing enough to reward their loyalty.

But analyzing customer data—like the kind gained through loyalty programs themselves or social media activity—can help improve the loyalty proposition by generating insights that organizations can use to build engagement with customers.

"Companies can benefit from advanced analytical techniques to design more relevant and meaningful communications, products, services, rewards, and experiences," loyalty expert Bryan Pearson writes in The Loyalty Leap: Turning Customer Information into Customer Intimacy. "These are the anchors of customer loyalty, and when done right, they drive financial performance."

Data collected through the revamped loyalty program of Jersey Mike's Subs, for example, is enabling the sandwich chain to communicate with members in new ways. Last April the company went digital with its loyalty program. It replaced a simple punch card with the option of a plastic membership card with a barcode or a near field communication (NFC) sticker that can be tapped at a register's reader.

Participants still earn points for a free sub when they purchase sandwiches, but the new program reduces fraud—employees could be generous with those punches for friends—and provides a new mechanism for data collection.

About 950,000 people have signed up for the program, there have been about 57,000 downloads of the program's mobile iPhone and Android apps, and about 870,000 members have opted to receive text messages. Now the chain can send texts like those promoting "double points Tuesday" at the store where the member joined the program.

CMO Rich Hope says he envisions additional marketing opportunities after Jersey Mike's collects more data about members who have not chosen to be anonymous and integrates the information into its point-of-sale system. He anticipates being able to greet a patron by name at the register, for instance, and to send an offer via text, email or the app to entice lunch diners to visit for dinner.

"I think the net result is you're able to reward loyal customers . . . but we'll also be able to serve offers that are more in line with what our customers may want or what we may think they might want to try," Hope says. "So that data really allows you to not just give a blanket offer to lots of people, but rather specific offers within specific groups based on their purchasing activity and their number of visits to the store."

Nissan, meanwhile, is finding other ways to use big data to impact loyalty. The Japanese carmaker has added digital and social data over the last three-to-five years to enhance its vast transactional database—one filled with data from millions of visits for parts and service that customers made to thousands of dealers across North America.

"The ability to put that data together with what [individual customers] may be doing online from a Web analytics prospective and what they're talking about in social media creates a pretty nice picture and a good source to work from once you reveal that enhanced view of the consumer," says Mark Deep, managing partner of CRM and loyalty at The Marketing Store, North America. The agency counts Nissan among its clients.

Armed with that visibility, The Marketing Store can use predictive analytics to understand how best to engage with Nissan customers, exploring "what's the right message to send to the right person through which channel and when's the time to do that," Deep says.

The agency can determine when to send customers an offer about servicing their brakes, based on details about their car, for instance. "Customers are more loyal to us since we anticipate their needs and deliver an exceptional service experience," Deep says.

Nissan has collected lots of data for years, about customers and their vehicles, but social media data is allowing companies that have traditionally operated in thinner data environments, like consumer packaged goods, to build loyalty programs and interact directly with customers, Deep says.

Jersey Mike's is bulking up its own data environment with its new loyalty effort and can provide more insight to its 600 locations, most of which are owned by franchisees. Now the company knows it's averaging more than 1,500 loyalty members per store, which is one of many findings punch cards couldn't have accurately revealed. "This has probably been one of the best embraced programs by the franchise community for Jersey Mike's ever," Hope adds. ■

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More Retailers View E-Receipts as Customer Relationship Channel

by Mindy Charski

Retailers are increasingly offering customers the chance to receive a receipt digitally instead of on paper, and there are clear advantages to consumers. E-receipts are eco-friendly, for instance, and may be harder to lose than slips of paper.

But perhaps the greatest benefits go to the savvy marketers who view e-receipts as messages that are more likely to stand out in a cluttered inbox because they have been requested by a recipient. That makes the real estate on e-receipts extremely valuable and ripe for marketing messages that can be all the more enhanced with the integration of big data analytics.

"There's an opportunity here for brands to begin a story with their end user," says Michael Hershfield, vice president, business development at Sailthru, a messaging and personalization platform. "[Brands] may be worried about the leaky bucket – [customers] buy one thing from you and you never see them again. This is an opportunity to begin to engage with them on multiple channels." Sailthru acquired a startup called Seamless Receipts in 2012 and is in the process of integrating that company's e-receipt technology into its full product suite.

Apple stores began offering e-receipts in 2005, and other retailers and merchants that have since followed include Urban Outfitters, Nordstrom, Macy's, Dick's Sporting Goods, Dillard's and Avis.

Rising Interest Among Retailers

The uptick in interest in e-receipts can be seen in a recent survey of clients by Experian Marketing Services, a provider of integrated consumer insights and targeting, data quality and cross-channel marketing. Last year about 20 percent of clients in its cross-channel marketing services division said they were sending e-receipts or wanted to in the coming year. When the group asked clients the same question this year, the number rose to 40 percent, according to Liz Gould, director of strategic accounts for cross-channel marketing at Experian Marketing Services.

Some companies are keeping it simple, sending a mere replica of the receipt a customer would otherwise get at a register. Technology issues with the point-of-sale companies they work with may lead some to stick to the basics, Gould says.

But others are optimizing their emails with interactive marketing elements. For instance, they may include links to visit the company's website, to follow the company on social media channels, to share purchase details on social media, to contact customer service, or to join the company's email list and loyalty program. They may also include promotions about other products.

Likewise, retailers could employ analytics to send product recommendations based on a customer's past purchases or even the sale that prompted the receipt. Those kinds of applications can be tricky, however.

"If I just bought a sweater and a pair of shoes and you want to make the next recommendation based on that, the recommendation engine – the logic you use – has to be crunched in real time, so when that trigger goes out in real time, the recommendations make sense for that email," Gould says. "There's definitely a lot going on to get really advanced in these types of e-receipts."

Still, Gould says many of her clients want to enhance their e-receipts and are testing elements like content and subject lines. Her firm's research spotlights the upside: Its Q1 2013 Quarterly Benchmark Study looked at 12 brands that deployed e-receipts and found those emails have a 33.7 percent open rate compared to a 16.2 percent open rate for bulk, or promotional, mailings. The study also found e-receipts have slightly higher transaction rates and saw revenue per email of 13 cents for e-receipts compared to 9 cents for promotional mailings.

Relevant Regulations and Errors to Avoid

But there are two temptations with e-receipts that marketers must avoid. First, they can't overwhelm the e-receipt with marketing messages that can transform it into a commercial message. This is important because while transactional emails are exempt from most provisions of the CAN-SPAM Act, emails deemed to have the "primary purpose" of being commercial must comply with its requirements.

Likewise, the Federal Trade Commission says emails that contain both transactional and commercial content can be considered as commercial if recipients would reasonably think it's a commercial message based on the subject line and if most of the transactional information doesn't appear at the beginning. "You have to be really careful about the way you're setting up your transactional messages if you're including promotional information," says Fawn Young, marketing strategist at email marketing provider Bronto Software, which requires clients to get transactional messages approved by its support team.

Secondly, it's also bad practice to assume customers who give their email addresses to receive an e-receipt want to be added to a company's email program with promotional content. "This has been a major pain in the space for consumers," says Jason Shapiro, chief executive officer of digital receipt provider TransactionTree. His system doesn't allow addresses to be automatically added to lists. (TransactionTree also enables companies to send SMS, or text, versions of receipts to mobile devices.)

Some retailers ask customers if they'd like to sign up for promotional email at the same time they ask about sending an e-receipt. And if purchasers decline? Shapiro says that's all the more reason retailers should provide highly targeted content with each e-receipt. He says, "They know that unless a consumer opts into their additional marketing, this may be their only opportunity to drive [that person] to become a return customer." ■

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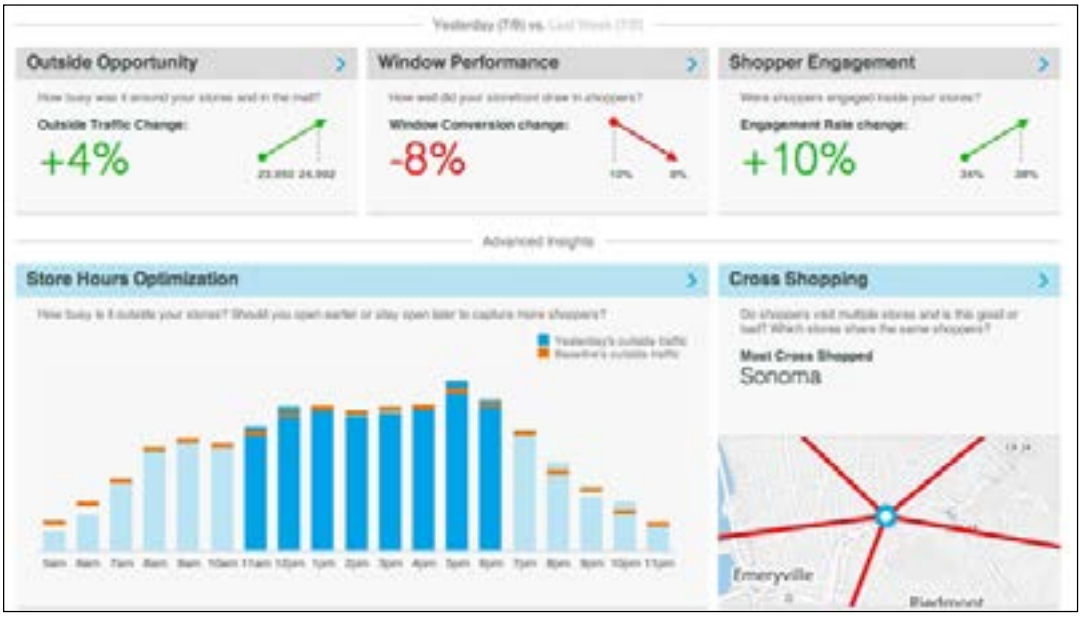
Euclid Data Scientist: In-Store Shopper Analytics Should Be Transparent

by Mindy Charski

Euclid is a retail analytics company that gives brick-and-mortar clients insights about customer traffic they can use to improve their marketing, merchandising, and operations. The Palo Alto, Calif.-based company, which doesn't disclose which clients it works with or how many it has, can help stores and restaurants answer questions like: What percentage of shoppers this week were in my location within the past six weeks? How long was the average stay? How many people walked by my location and what percentage came in?



A screenshot of Euclid's analytics dashboard. The company is one of several that offers indoor location analytics for retailers.

Euclid gathers this kind data by sensing the MAC addresses of mobile devices like smartphones that send Wi-Fi pings and recording the movements of those devices. The company doesn't collect any personal or sales data of customers, and clients only see anonymous, aggregate data that Euclid analyzes.

Euclid isn't the only player offering indoor location analytics – iInside, Nearbuy Systems, and RetailNext are others – but it's the only one in the space to receive a letter from Sen. Al Franken inquiring about its practices.

Franken said in the letter dated March 13, 2013, that he finds it "troubling" that, as news reports suggest, Euclid has tracked the movements of millions of Americans in its clients'

stores without permission from those consumers. Some customers of Nordstrom were also troubled by the technology, according to a New York Times article that quoted a Nordstrom spokeswoman saying the retailer had heard some complaints and that its experiment with Euclid had ended in part because of the comments.

Euclid analytics scientist Michael Minar spoke with Data Informed about some of the early hurdles it's facing as analysts in a promising category rife with privacy concerns:

Data Informed: Were you surprised by the publicity around Nordstrom and its use of Euclid?

Minar: I wouldn't say we were surprised. We were disappointed that the articles were written in the way they were because we feel they weren't representative of what we're trying to do. Privacy is something we've thought about from the very beginning, and we thought about it because we know it's important to a lot of people. It's important to us as well. We ultimately believe whatever product has long-term value in this space will be one that respects privacy and offers services in a way that is consistent with that. We also feel the conversation is evolving. As people get more exposure to the types of value we're able to offer and what it is Euclid does, that conversation and reaction shifts and is an ongoing thing.

Following those reports, did you sense prospects were nervous that the same misconceptions would emerge if they hired you for retail analytics?

Minar: I wouldn't say there was a scare in the air. We expected there would be conversations like this moving forward, and it just was something we were going to have to continually engage with and be transparent on and educate folks about what it is we do. There's an acknowledgement right from the get-go that we are doing something new. We believe we're doing it in a responsible way. We expect it to be a process that takes time and I think most everyone we talk to feels the same way.

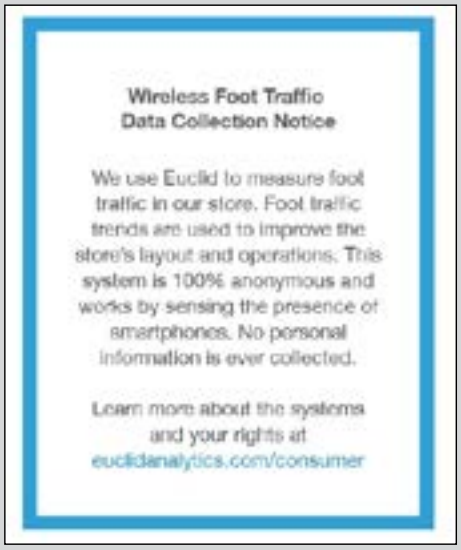
Nordstrom posted a sign explaining its collection of anonymous, aggregate information from customer devices and there was a link to opt-out. You're now stipulating in contracts that all clients must post signage about its use of the technology. Why?

Minar: We believe if you want to be around in this space for the long term, you have to offer value to customers that allows them to better service their own customers and does it in a way that respects their privacy. We believe it really is just a process and part of a conversation. Any time you're offering a new technology and a new source of data that can offer value, there's going to be a period where, because it's new to folks, there's an intrinsic discomfort with it.

You saw the same thing with online analytics. When cookies were first catching on, people didn't like them. That quickly died away as people became more comfortable with it through time and through the fact their experience was improved by the data that was collected. Amazon has an incredibly successful Web page and you can always find exactly

Euclid Entices Merchants to Analyze Shopper Behavior

Euclid is now offering a free customer analytics platform called Euclid Express for retailers, quick-service restaurants and others with physical locations. The product, which launched in January, can interoperate with the Wi-Fi infrastructure that a majority of stores have already deployed, says Adam Wilson, Euclid's chief marketing officer.



An example of Euclid's consumer notice.

Clients can use the tool to gain basic insights like how long visitors stay and what percentage of them were new versus repeat customers. "The Euclid Express product removes barriers to trial and gets analytics in the hands of marketers and store operations managers," Wilson says.

The company hopes clients of the free product will ultimately upgrade to the paid version, Euclid Advanced, which offers features like predictive analysis and more detailed analysis of campaigns, according to Wilson.

One company that has been using Euclid Express is Merch, a specialty retailer in San Francisco. Owner Yong Cho began using the product in November when it was in beta testing. The data helps her answer questions like how effective special events are for attracting new shoppers and building repeat business.

She's also better understanding the impact of modifications she makes to window displays and merchandise placement. "With the Euclid data I can more effectively evaluate if these changes are bringing more people into the store and engaging them for longer periods of time," she says.

Cho posts a notice about data collection near the point of sale system but says no one has expressed concern or asked questions.

Meanwhile, Greg Sterling, a senior analyst at the advisory firm Opus Research, says Euclid's free product is an interesting effort to boost adoption of in-store location analytics.

"In the beginning of a market segment or a startup's lifecycle, it's not uncommon to make the product free, in fact that's probably more often the case than not – but [it's] usually in the consumer context and not so much in [business-to-business] or enterprise scenarios," Sterling says. ■

what you need and it has a great recommendation engine for products you may not even have been looking for. That didn't just happen, and I think people take that for granted. It happened because they were using online analytics in a responsible and valuable way.

Why require people to opt-out of having their devices monitored rather than opt-in?

Minar: The reason to do an opt-out model is because you want to be able to sample enough of the population that you can really deliver credible, valuable data to people who are making decisions on how to run their business. We've built our product in such a way that the types of things we report – these aggregate traffic metrics, counts on a given day, counts on a given hour, segmenting really broadly among first-time visitors and loyal visitors – these are the types of things you can do in a way that respects privacy and allows for the opt-out model.

There are a host of other products and services we may offer down the line that are on an opt-in basis. Certain stores have talked about developing their own apps and by downloading the app you agree to some terms of service. You can then opt-in and join actual personal information with our traffic analytics and you could offer even more compelling business insights, but those are the types of things you really need an opt-in model for.

Do you have plans to launch a customer-facing indoor location product, like one that provides location-based offers, in the near term?

Minar: It's something we obviously think about. It's not an area of focus right now. We are finding it's a process. Before you can deliver widely these highly tailored deeper dives that require an opt-in approach, you really want to establish this base layer of service where people are responding to the real low-hanging fruit about what constitutes healthy stores and healthy chains and how to optimize certain things. The industry is seeing this layer of data for the first time and is really starting to respond to it, and we want to further flesh out those offerings before we devote many resources to the other.

In his letter, Franken says he thinks Americans "have a fundamental right to not be tracked without their consent – especially in the real, 'offline' world where they are less likely to expect it." Do you think people don't expect to be tracked in the offline world?

Minar: I wouldn't consider myself qualified to say what the broad masses of people expect or do not expect. What I would say is what we do isn't tracking. We don't know any of the type of personal information we could actually know to "track" someone. We really offer just a set of analytics around a particular location at a particular time that's anonymized and aggregate. ■

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Effective Customer Analytics Call for Data Integration, Culture Shifts

by Mindy Charski

Today, many marketing organizations are finally exploiting the vast potential of their data to better listen to customers and strengthen relationships by creating offers and experiences that are more relevant and engaging. It's all part of a quest to win customers' loyalty and dollars. But, as was made clear in presentations during the 2013 Engagement & Experience Expo, held in Dallas November 5 to 7, organizations are moving at different paces toward their goals and confronting similar internal challenges on the trek.

Still, there was a celebratory feel at the conference organized by Loyalty 360 – The Loyalty Marketer's Association that marketers have won C-suite support for their data-driven efforts. That spirit was best articulated by presenter Stan Lucas, assistant vice president, customer intelligence and insights at Ascena Retail Group.

"I know for a while a lot of us felt like we had the right idea, but we couldn't quite get it across to the people who were used to looking at finance reports and transaction reports because all they wanted to do was see those hard numbers," he said. "But a lot of us persevered and pushed and found partners . . . to really make sure this type of data becomes more important and changes the cultures within our industries."

Lucas described how in 2009, his small customer insights department at Charming Shoppes – which Ascena would acquire in 2012 – was fielding public relations requests for fun facts about customers for the website or presentations. "We really felt that's not what we were about," he said. "We had data that could really influence what we could do in our stores, in our buying departments and in our marketing departments. What we really didn't know about was if we could convince people to take this data and combine it with the transactional stuff and the finance stuff."

Lucas's department wanted to consolidate all areas of customer feedback for its Lane Bryant brand and do the same for its Catherines brand. The voice of the customer efforts would help it understand not only what the customer did, but why she did it and how she felt about it, too, Lucas said. Today Ascena is able to funnel information gathered from emails, blogs, surveys, Facebook and other sources into a customer experience hub for the brands; transactional data sits outside of it but can often be matched back to customer feedback.

But moving from vision to reality took time. In 2010 Lucas's team began working with software company Clarabridge to build the hub and started showing executives what it was learning from its data. Lucas said the next year the group "continued the buy-in journey" at the grassroots level.

"We needed to make sure everyone understood this and start showing our buyers and users and internal partners how they could use this data and it would be valuable for their

time," he said. "We had to explain to [our stakeholders] sentiment scoring and statistical significance of comments and how we were moving away from the focus groups of one and the one-off comments they would be hearing in the store."

Retailer's Customer Engagement Hub

Luxottica Retail North America is also making a shift to embrace data and analytics in an effort to better serve customers.

But the unit of the global Luxottica organization, which owns brands including Ray-Ban, Sunglass Hut and Oakley, has had to deal with challenges that are familiar to many retailers. The company had lots of data from multiple brands, and because the data was outsourced, accessing the marketing or finance databases was not easy, said Maya May, senior director, retail optical CRM and loyalty at Luxottica Retail. There were also multiple vendors across brands and units and a "clear gap" of analytics talent. "We realized the vision of knowing our customers better needed a solid foundation," she said.

Luxottica began working with the customer intelligence company Aginity about nine months ago to create a customer engagement hub that will provide a single view of customers and help it understand what are some next-best actions to take with marketing, for instance, and who's at risk of churning. The hub is getting feeds from Luxottica's data sources like Epsilon for data cleaning, SAS for predictive modeling, SAP for inventory management and Adobe for Web analytics.

There's also a lot of change management going on in the company, May said. It's hired many analysts and leaders with backgrounds in analytics, for example, and there's an effort underway to alter how the organization thinks about data. For instance, May said, "We're doing a lot of teaching to say, 'Here's what it means when something is predictive.'"

Though the company is now in what May described as "stage one" of its data-driven efforts, she said the vision is for North America to be a "center of excellence for retail" that can be exportable to other locations around the globe. The ultimate end game, May said, is to be able to create a personalized experience across every touch point.

The Data Integration Behind a Customer Loyalty Program

That's a familiar notion to video game retailer GameStop, which has experienced its own shifting mindset as it's improved the ways it uses data to strengthen omnichannel customer engagement. One of the core reasons GameStop built a formalized loyalty program about three years ago was to tie together vast amounts of Web analytics, transactional data and other kinds of information to specific individuals, according to presenter Ashley Sheetz, GameStop's chief marketing officer.

Its PowerUp Rewards program now has 25 million members, which account for 20 percent of GameStop's customers. "What [the program] has enabled us to do is identify now 75 percent of all our sales come from those 25 million customers, so we're able to be personal

and relevant to those customers in ways we never could before now that we know who they are," Sheetz said.

As part of that effort, the company recognized it needed to offer the same personalized experiences on its website and mobile app that it offered in the stores, where associates ask patrons about the games they like and the consoles they have, for instance. "We have 12 million unique visitors to our website every month, but everyone who hit that website had exactly the same experience," she said.

Another pain point: GameStop was thinking about its channels in silos, Sheetz said. That was a problem, for instance, when consumers were frustrated that they couldn't use online offers in the stores. "We were trying to think about objectives and initiatives based on what we wanted to do with our business, instead of putting the consumer in the driver's seat and asking, 'How is the customer using our website? How are they using their mobile devices to engage with us?'" she said. "As we've progressed, we've spent the past couple years completely blowing up all of our old strategies because they weren't consumer centric."

But to enable some of its new concepts, marketing needed IT's help, and Sheetz admitted she initially didn't do a good job communicating with her IT organization about what she was looking for. "We weren't speaking each other's languages," she said. "And on top of that our IT department just wasn't structured in a way to do some of the things we wanted to do . . . It wasn't as easy as, 'Oh we have these amazing strategies on a piece of paper. Here, take it and please go build this.'"

Communicating the Value of Customer Analytics

Meanwhile, attendees learned a different kind of language is necessary to sell data projects internally. Michael Hooper, director of customer research at American Airlines, suggested that marketers "find a way to tie your data to profitability so you can talk in terms the business leaders understand." He candidly added, "I'm not claiming that we've successfully done that completely to the extent we want to."

In his moderated discussion at the conference, Hooper described American's ongoing efforts to transition into an easier-to-access, integrated platform for customer feedback derived from sources like internal studies and syndicated competitive data. One way the airline is using the data, he said, is to monitor the success of new flight meals in terms of customer perception.

Hooper also advocated not only promoting one's own efforts, but also finding "champions" of the data who can assist as well. "Sometimes in our world we spend a lot of time trying to convince people they need something," he said. "Find the ones who know they need it, want it, and can't get enough of it, and help them be your evangelists." ■

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The New Approaches Required to Find Insights in the Big Data Deluge

by Dev Patel

With billions of people using multiple devices and apps to access the Web today, the very nature of data is rapidly evolving—it is no longer static, well-structured or predictable. Rather, massive amounts of Web interactions, mobile, social and sensor data, arriving in real time, now appears as more "polymorphic," or shape-shifting, in format over time.

Today's fast-paced innovative companies are recognizing that there is significant value to be unlocked by running the gamut of analytics – from basic reporting to ad hoc exploration to predictive analysis on all this semi-structured data. And going forward, the effectiveness of analytics that businesses deploy will require tools and technologies to derive value from this data.

Use Case: The Semi-Structured Data Trails from a Retail Flash Sale

Think of a retailer that just launched a new "flash sale" capability on their e-commerce site. Basic Web traffic reporting will give them information on the new feature uptake with metrics like the number of users who visited and bought goods during the flash sale. But is a count of users the true measure of success? The answer could be more complicated than that. What if the same users stopped buying regular priced items or now spend less on average? What if the flash sale offer puts off the merchant's biggest customers?

This is where the retailer really needs to investigate what's behind that initial count, to understand who is buying, whether they are new or repeat customers, their average spend and frequency of purchase before the new feature was launched compared to after it was launched, and other factors. Once the retailer's decision-makers understand the true value of the new flash sale feature, they need to then drive more people to future flash sales on their site. And the retailer will see much greater ROI if they optimize their marketing campaigns to find more consumers specifically like the ones who already transacted.

To do this, the retailer needs to go beyond basic demographics – discovering what the same users do on other sites, who they buy for, what time of year, what other products they purchase, and other details. This is where predictive analytics comes in. All of this data can be used to create a much richer, deeper profile of their ideal customer, to send tailored messages only to the people who might benefit from them. A side benefit of this targeted approach is that you don't alienate other customers with irrelevant or poorly-timed sales pitches.

Offering a flash sale can be about much more than introducing a new feature at an online retailer. It can introduce a new level of analytics, with the goal of driving more dollars to their bottom line. But the volume, variety and velocity of the dynamic data involved make analytics orders of magnitude harder to do than on traditional, structured data.

Busting Out of the Traditional Data Warehouse

Legacy data warehouses and their attendant technologies, tools and processes were never designed for this. Any attempts to retrofit their technology for semi-structured data results in costly purchases of their uniquely engineered systems to house this increasing volume and new, custom ETL code to impose a schema on this data prior to loading into systems designed only for well-defined structured data.

New tools like NoSQL databases and Hadoop have emerged in the last few years to fill the gap. While both excel at being able to collect and store vast amounts of semi-structured data, they fall short on being able to fulfill the full spectrum of a company's analytics needs.

For example, NoSQL databases like MongoDB, are great at fast storage and retrieval of JSON (Java Script Object Notation) data, but don't work well for complex analytics requiring joins across collections, ad hoc queries with multiple values, and conditions and ranges where you don't yet know the arguments for querying.

Hadoop is a batch-oriented architecture, requiring MapReduce "jobs" to be created, submitted, and run – this can take anywhere from minutes to hours to produce an output. That's a non-starter when you want a fast answer across multiple records of quickly streaming and changing data or want to iterate quickly on ad-hoc, investigative analytics.

These newer NoSQL technologies are also controlled through imperative code (Java), rather than a declarative query language (SQL), restricting their use to developers and programmers. This means the vast majority of business professionals skilled in SQL are rendered unproductive and dependent on a few, costly specialists to answer their analytics questions.

The Hadoop community is trying to remedy this with solutions like Hive, Impala, and Stinger, which bring SQL querying capability to Hadoop. But they are solving the problem in the same way as traditional data warehouses – by imposing an upfront relational schema on this data through ETL and custom code to be able to access it using SQL. This is a circular argument: in order to explore and understand your data, you first need to know it well enough to define its attributes and schema upfront.

Commodity Hardware Supports a Fresh Approach

A fundamentally new approach to semi-structured data analysis is needed – one where you can cost-effectively store and manipulate the data in its native form, without spending effort upfront modeling, transforming, normalizing it. SQL as the query language is a must, to enable broad use and access and bring insights to the decision-makers quickly.

What does this mean in practice? First, "cost-effective" means being able to scale compute and storage horizontally using commodity hardware. Storing the data in "native form" requires that the underlying analytics system adds support for a semi-structured data type that can load JSON, XML, key-value pairs, and data arrays. Next, there needs to be a dynamic schema generated that translates attributes (even those nested in arrays) into "virtual columns" so that they are readable using SQL. This "schema-on-read" approach solves

our circular problem – giving analysts the ability to use SQL against data whose schema is not known in advance. Finally, the system needs to enable truly interactive data exploration.

There are many, many challenges to be solved here in the areas of improving query performance to enable true interactivity. For example: managing data skew (such as nulls in records created prior to a schema change), allowing for conversion to physical columns for better performance, adding support for partitioning and indexing, and full SQL compatibility.

Building on our flash sale example, the retailer offering the sale may be logging several attributes for each user and their interactions with the site through their Web instrumentation systems. A raw entry for one visit to one page for one user could contain things like:

- Date/time of visit
- IP address and possibly a cookie for the user
- Browser version
- Page URL
- Type of request
- The preceding page URL (the referrer)
- Product(s) selected

But in order to count the number of unique visitors in a day to one part of the site (the flash sale area), you don't want to have to go through all the entries of all the visits of all users to all parts of the site for all time. Those could be billions of records—all of which have to be read from disk. The best way to avoid this is to trim the amount of data needed to be scanned to build the result set of the query, with options like columnar layouts and partitioning.

Traditional data warehouse vendors have spent years solving these challenges for structured data, in the process giving rise to an entire cottage industry of players whose sole purpose is to cleanse, normalize and optimize data layout for high performance analytics. One approach is to try and adapt these add-on solutions for semi-structured data –and this effort is underway with various ETL companies announcing their support for manipulating JSON.

The newer players have the advantage of having lots of commodity hardware to throw at the problem and are focused on improving how they harness the hardware resources through better resource and workload optimization.

The future of analytics lies in semi-structured data and a robust ecosystem of tools and technologies that is developing to derive value out of this data. It is far from clear which particular tool will win out, but the goal is clear: Being able to marry the robust, universally adopted analytics capabilities of the traditional relational world with the cost-effective compute and storage scaling provided by newer, open source tools. ■

Dev Patel is CEO of BitYota, a data warehouse-as-a-service company that makes a massively parallel database engine. He previously worked as a vice president at Yahoo, managing several advertising products and data systems.

How Automated Financials Can Add Insight and Prevent Losses in Retail

by Brad Alexander

With the conclusion of another holiday shopping season, retailers have an opportunity to take stock and consider how they can identify trends, spot irregularities and better manage their business during peak seasons. The kickoff to holiday shopping is called Black Friday for a reason: it's the mythical point at which retailers begin to turn a profit, or get "in the black" for the year. Though many retailers operate profitably throughout the year, the holiday season represents a significant opportunity to bolster sales before year-end.

This is why it's essential that holiday sales data is carefully managed to capture revenue and minimize errors and fraud. Without an automated system in place, financial and accounting teams are easily overwhelmed.

To prepare for the annual surge in holiday shoppers, retailers typically hire additional store personnel, but back-end finance teams are not so lucky. These teams handle account reconciliation – the process of matching store sales information with bank deposits and credit card receipts – a tedious, time-consuming task that increases with the spike in holiday sales.

Manual Systems Lock-Up Data, Expose Retailers

The majority of large retailers have sophisticated systems in place to reconcile accounts; it's the smaller, growing retailers that often have not built such systems to keep pace with growth. Instead, they rely on manual account reconciliation in Microsoft Excel, which is tedious, inefficient, and exposes retailers to risk. From a data standpoint, manual systems often fall behind and make it impossible for retailers to access crucial data, such as credit card discrepancies and irregular deposits. Such delays are costly.

During the reconciliation process, sales data is matched with bank deposits or credit card processor activity to verify that payments received at the point of sale ultimately end up in the company's bank account. For example, a $50 purchase recorded as a sale would then be compared with the credit card payment or the store's cash deposit to the bank. Each transaction rolls up into the cash line on the balance sheet.

When the items don't match (an "exception" in accounting terms) the accounting department must then investigate the discrepancy. With manual processes, accounting teams spend the majority of their time matching identical items, leaving precious little time to resolve discrepancies, and more importantly determine their root cause to prevent them from recurring. Companies are at the mercy of chance to stumble upon important discrepancies while they still have time to act. With a software application, the focus shifts from daily checklists to more value-added activities, such as analyzing exceptions.

For example, when a consumer disputes a valid credit card transaction, the onus is on the retailer to provide evidence that a charge is correct within a narrow response window, typically 45 days. If the retailer misses this window, it loses the revenue. An automated reconciliation process delivers the data to retailers in just two or three days, enabling them to react to claims when it matters; with a manual system, it could take months to get such information.

Timeliness is also a factor when tracking deposits. With a manual process, it is common for missing or late deposits to go unnoticed for several weeks. Irregular deposits could point to poor training or even theft. For example, if a seasonal employee pocketed small amounts of cash from the register, such shortfalls in the store's daily deposits could be missed until after the holiday rush when the employee has moved on. Automated systems deliver trend data to help spot irregularities while companies still have time to act.

Poor access to data also hinders a retailer's ability to understand the source of operating problems. With a manual reconciliation system, a restaurant chain was forced to take significant write-offs due to cash shortages, which they attributed to a lack of visibility into bank deposits and low discipline in store operations. Once the company implemented an automated solution, it was able to understand the source of the shortfalls and reduced the annual write-offs by more than $100,000.

A Paper Trail Prevents Fraud and Maintains Consistency

Delays associated with manual processes not only impact revenue, but also point to poor controls that can expose retailers to compliance risks.

Such was the case for Siemens North America, where historically account reconciliation was decentralized among the electronics and engineering conglomerates' many business units and much of it was handled manually in Excel. This manual process- checking a box in the Excel spreadsheet- did not provide the controls needed to manage the balance sheet per federal regulations. Siemens sought to reduce risk and improve efficiency when it bundled its regional infrastructure in a Global Shared Services Center. As part of that project, Siemens worked with my company to implement an automated reconciliation tool that created an audit trail. The technology controlled access to information by user, and also tracked any changes in the reconciliation process or the related data, enhancing these controls to better meet auditor and regulatory requirements.

The same principles apply in retail. With a manual process, there are no barriers to an employee entering fraudulent data in a spreadsheet. An automated solution can set up permissions and controls, allowing end-users to only manipulate certain parts of the solution and providing documentation when data is altered or a process has been changed. Furthermore, an automated system also creates a roadmap for any new employees to ensure the same process is adhered to each month.

Adopting an Automated Reconciliation Process

Frequently the trigger for adopting an automated reconciliation system is the anticipation of growth, often through a merger or acquisition. However, the success of an automated tool requires the finance and accounting team to embrace an entirely new approach to reconciliation: at its core, it's making the reconciliation process a daily task instead of a monthly one. But the process itself must first be a sound one. Before setting up an automated tool, an organization should first reevaluate its entire reconciliation process; automation will ease the burden of mundane data review, but it cannot fix a process that is inherently broken. For example when another of my company's customers, pharmacy benefits manager CVS Caremark, implemented an automated reconciliation process, it found that some accounts were being reconciled multiple times while others were not being reconciled at all. An automated system helps prevent such irregularities.

An automated tool will elevate the activities of the accounting and finance teams from sifting through data to researching discrepancies and analyzing trends. And it provides timely access to data to make better-informed decisions and improve operations. Once in place, an automated system equips teams with a tool to expand with a rapidly growing market, grow through a merger or acquisition, or endure another holiday shopping season. ■

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How Online Merchants Can Reconnect with Shoppers Who Browse and Leave

by Mindy Charski

One way Merriam-Webster defines "abandon" is "to leave and never return to (something)," but many of today's e-commerce firms don't seem interested in embracing such a bleak definition. Instead, many are viewing so-called "browse abandoners" – those who have looked at items online but left a site before putting them in a cart – as opportunities. They're betting that with a little friendly nudging, visitors can be persuaded to re-engage and take the next step in the buying process.

Although one way to reel back visitors is through retargeting with online display ads that feature abandoned items, it's not the only option. Companies can also send browse abandonment emails that, used alone or in conjunction with retargeting ads, can keep the dialogue rolling with visitors who have at some point provided an email address.

Because you can have more content in an email than a display ad, you can converse more deeply, says Angel Morales, co-founder and chief innovation officer of Smarter Remarketer, which helps companies build and automate remarketing campaigns. "It's not a superficial, 'Hello, how are you?' It's a 'Let's really have a conversation.'"

To target browse abandoners through email, companies need to put tracking code on certain Web pages that will be integrated with their e-commerce and email platforms, says Laurie Hood, vice president, product marketing at Silverpop, a digital marketing technology provider. "What you're doing with the tracking code is looking at the cookied [browser] information and saying, 'Do I have a match with an email I already have permission to send?'" she says.

A Further Step After Abandoned Online Shopping Carts

Browse abandonment email campaigns employ a similar tactic as cart abandonment campaigns, which target visitors who have put items in a cart but did not complete the checkout process. Hood, however, recommends companies launch browse abandonment programs only after they've established programs for those who have left items in their carts.

"Cart abandonment is where you're going to start. Then it's kind of like, 'If I've got a cart abandonment program in place, what's the next frontier?' And that logically takes you to browse abandonment," Hood says. "Somebody was interested enough and engaged enough to be on the pages on your site, so how can you potentially recapture them?"

To be sure, cart abandonment is still gaining traction, so browse abandonment – which Hood named as one of the key tactics of 2014 in a December webinar – is being used

even less by marketers, she says. To give some perspective, research conducted by email marketing firm Listrak in 2013 found that only 24.5 percent of 1,000 top retailers sent at least one remarketing email after a cart is abandoned.

It's also worth noting that browse abandonment emails tend to perform worse than cart abandonment ones but better than emails not triggered by a particular action. "You're not going to see the high dollar values that you would see with cart abandonment because you're in a different stage in the process, but you're going to see a better return than with a typical blast email program," Hood says.

One example she gave in the December webinar showed browse emails from a 2013 program from the online retailer UncommonGoods saw a 2.2 percent conversion rate versus a 1.6 percent rate for broadcast emails. "While we're not necessarily talking about massive shifts, we are talking about a simple way to continue to contribute additional revenue," Hood said in the webinar.

The Importance of Communicating with Context

Some browse abandonment emails – like the one this reporter received recently from Target – have a similar look and feel to a typical cart abandonment email. In my case, I had been looking for a brown t-shirt for my son, and though Target had a large assortment of $6 t-shirts in its Circo brand, none were in the color I needed, so I left the site.

Five days later Target sent me an email with the all-lowercase subject line "thanks for clicking. shop again." Copy inside the email said, "Still thinking about this item?" next to a picture of the tees in multiple colors and a link to the product page. The message also included the words, "there's more where those came from. Check out these other great items," and showed an assortment of products that included a treadmill and a side table.

But certain purchases – especially high-priced ones like a cruise

Tips to Address "Browse Abandonment"

Laurie Hood, vice president, product marketing at digital marketing technology provider Silverpop shares these tips on launching a browse abandonment program:

Start simple: Don't put tracking codes to trigger browse abandonment emails on every Web page but rather insert them on a handful of popular pages from which people could fill a cart.

Feature educational content to push conversion: Include calculators, wizards, buying guides, customer testimonials and how-to videos.

Test for timing: For some companies, sending emails to browse abandoners quickly can win a sale, but there may be less of a sense of urgency for those researching, say, a cruise.

Maintain consistency across channels: Browse abandonment programs can work well with online display retargeting, but make sure you're communicating the same message.

vacation– would likely require more purchase consideration than a t-shirt. So unlike cart abandonment emails that are more about selling, Hood says browse abandonment emails should generally focus on educating and building relationships.

That requires more than simply reminding customers of items they perused. "You can't send [visitors] an email and go, 'Hey, saw that you were on my website looking at Caribbean cruises, buy one from me,'" she says. Instead the cruise site might want to send a Caribbean cruise planner wizard with elements visitors would need to consider before purchasing. That kind of play would require companies to create the right content as well as understand elements like buying indicators, buying intent, and how to bring someone from a browse situation into a buy situation, she says.

For retailers, Morales says browse abandonment emails need to offer an educational experience like one customers would get if they were speaking with an associate in a physical location. "If I'm engaging with technical products or products that are higher cost, so there's a little bit of trepidation there, don't be afraid to acknowledge that and put me into a drip-style [email] communication that talks to me about the really unique things about 3D LED TVs," he says. "Reinforce that value message and push me, coach me through that purchase process digitally the same way we would do it if we were in a store."

Marketers should also use data they have about visitors to individualize a message. So while a company may not generally want to give an offer in one of these emails, Morales says it may choose to send one to a good customer whose relationship is in jeopardy. "It's so important to realize and respect the concept of 'Who is this person who is browse abandoning?' If it's a high value, disengaging customer, you bet there's a lot more urgency for me to get a message back in front of them and have that dialogue," Morales says. "If I can keep them buying from me, it's a lot more cost effective to keep an existing customer than try to find a new one." ■

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Analytics Developers, Retailers Seek Path to Address In-Store Privacy

by Mindy Charski

Retailers are increasingly tracking the movements of shoppers inside and near their stores. Many are doing so using Wi-Fi or Bluetooth sensors that detect when cell phones in the area broadcast their unique MAC addresses.

The technology providers who are working with stores aren't collecting personal information through this method; they're using the data to create aggregate reports on topics like repeat traffic or time spent in checkout lines. Still, acknowledging that customers may have privacy concerns about the tactic, a group of mobile location analytics firms have taken steps to add transparency and customer choice into the equation by creating the Mobile Location Analytics Code of Conduct.

The code, which debuted in October, is a self-regulatory framework for the services that mobile location analytics firms provide to brick-and-mortar clients. It spells out rules about how data for shopper analytics can be collected and used and also establishes the right of consumers to choose not to have their mobile devices tracked.

The code was devised by a group of analytics firms that collaborated with the Future of Privacy Forum, a think tank, and U.S. Senator Charles Schumer of New York, who in July called cell phone tracking "intrusive and unsettling." So far 11 analytics companies have agreed to follow the code's guidelines.

"[The code] has gone a really long way in the minds of the retailer to help clarify how to responsibly use this technology to optimize the shopping experience," says Adam Wilson, chief marketing officer of the analytics company Euclid, which participated in the code's creation. "And I think on the part of consumers it's gone a long way to assuaging their concerns that personally identifiable information is being collected and tracked without their knowing."

Projects Intended to Improve the Shopping Experience

The code has emerged as an increasing number of retailers are embracing the use of data to improve the shopper experience. Greg Sterling, a senior analyst at the advisory firm Opus Research, says all the major retailers are either actively experimenting with location analytics or "sniffing around the edges." At the same time, retailers have a "high degree of sensitivity" about the privacy aspects involved, says Sterling.

Parts of the code focuses on rules about the data itself – requiring, for instance, that companies promptly take measures like hashing a smartphone user's MAC address to ensure the data can't reasonably be linked to an individual. The code also states that someone must opt-in to have his or her personal information linked to a MAC address or to be contacted based on mobile location data.

Participating companies also must create policies for keeping and deleting unique device data, and if a firm shares shopper analytics data with a third party, that third party must contractually agree to use it in a way that is consistent with the code.

Other principles of the code are aimed specifically at consumer empowerment and education. For instance, the guidelines say analytics companies should give consumers the ability to stop having their mobile devices used for retail analytics.

Opting out from data collection – at least by the analytics companies that have agreed to the code – became a lot easier on Feb. 18 when the Future of Privacy Forum launched a centralized opt-out website. The platform was built for the think tank by The Wireless Registry, which is a global registry of wireless names and identifiers.

One aspect of the code that could make some retailers queasy stipulates that analytics companies should take "reasonable steps" to require that clients display signage about the use of tracking technology and explain where consumers can find more information and "exercise choice."

Displaying that kind of signage backfired last year on Nordstrom when it was working on tests with Euclid. Some customers were troubled by the technology, according to a New York Times article that quoted a Nordstrom spokeswoman saying the retailer had heard some complaints and that its experiment had ended in part because of the comments.

Still, Euclid's Wilson expects more retailers will abide by the new notice rules. "The code of conduct is relatively new, so it is an evolving process," Wilson says. "Over time we will see broader adoption of these best practices and recommendations."

For its part, Euclid is sending clients a standard notice it "strongly recommends" they post in their stores and is offering training to ensure clients are adhering to the new guidelines. Euclid can help prepare store managers

and employees for answering basic questions about what information is being collected and how it's used, Wilson says.

"What we find is that in most cases if people are curious, once they understand a bit more about what we're doing and discover it's really anonymous device data and only used in aggregate and that information contains no personally identifiable data around names, addresses, phone numbers or emails, then pretty quickly they become much less concerned about what's going on there," Wilson says.

Nonetheless, many consumers may not yet see what they get out of the arrangement. The advantages are clearer when they log into a retailer's in-store app and receive benefits like coupons, but that is a separate use case that requires an opt-in. When their device information is tracked to improve customer experiences, like knowing which times require more staff, the benefits are indirect and harder to grasp.

"Right now we're at the early stages where we're starting to collect the analytics but not a lot of companies have yet turned those analytics into actionable rewards to enhance the

shopping experience for customers," says Chris Gilpin, co-founder of Turnstyle Solutions, another analytics firm that helped develop the code. "Once that starts to happen I think [customers] will start to understand the benefits of this type of technology and hopefully embrace it more."

A Debate Over How to Communicate About Shopper Monitoring

The new framework, which isn't applicable to other location tracking technologies like video or LED lighting, is receiving mixed reactions. Sterling of Opus Research says the privacy policy of the code is a "very strong start and will probably be the basis of some much more formal industry and government agreement" about location analytics.

But Mallory Duncan, senior vice president and general counsel at the National Retail Federation, criticized the code at a recent Federal Trade Commission seminar on mobile device tracking. "On behalf of the retail industry, I have to say the overwhelming majority is not at a point where we think this code has all the elements that we think are necessary or appropriate," Duncan said.

He offered the example of using heat-map technology to keep checkout lines short and said, "That, I would argue, is a benefit to consumers, but it's not necessarily something that you're going to provide notice about because it's almost an intrinsically good management of the store operation."

Duncan added, "To suddenly proliferate whole bunches of new signs either for this technology or for other technology that's used to accomplish the same sort of thing strikes us as perhaps a bridge too far at this point in light of what's actually happening."

In response, Jim Riesenbach, chief executive officer of the retail analytics firm iInside/WirelessWERX, acknowledged the technology is constantly evolving and the code – which his company helped create – isn't a perfect solution. "We felt there was a lot of confusion in the marketplace and this is a good first step," he said. "Our attitude has been, 'Let's get as far as we can right now, let's get something out into the marketplace that shows positive intent and positive steps and what we can do today as an industry.'"

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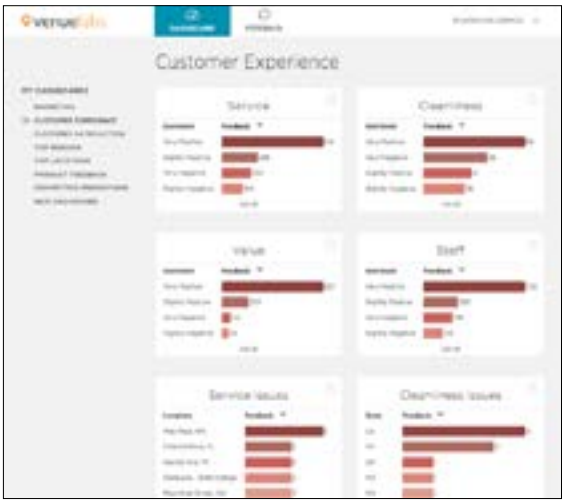
Brand Owners Use Location Analytics Lens to View Social Media Streams

by Michael Goldberg

If there's a complaint on Facebook about restroom hygiene at an Applebee's in Miami, what is the brand manager monitoring the national restaurant chain's mentions on social media supposed to do?

Contact managers at each of the chain's five eateries in the area? Start a spreadsheet tracking all comments in South Florida? Reiterate corporate policies about regular lavatory cleanups at all its restaurants across the nation?



A demonstration view of a Venuelabs dashboard showing customer activities including complaints.

The need for more data is clear. And while marketers have been analyzing social media sentiment for clues to market signals for several years, correlating this social media signal with location data can determine whether this Facebook mention represents a marketing issue, an operational problem to fix, or an outlier. This use case for location analytics describes the work of developers at Seattle-based Venuelabs, which counts as customers Applebees and large retailers like Albertsons, as well as regional and local outlets. In all, the company monitors social media activity for approximately 500,000 locations owned by 3,500 brands in 15 different B2C categories, with retail, restaurants and convenience stores the largest customer groups.

"Many brands are focused on general media mentions. The missing link is location," said Neil Crist, CEO of Venuelabs, which he founded in 2008. "Location is about [that fact that] we know they were there. The comment reflects a sentiment based on experience."

Location analytics is a potential competitive differentiator, according to Ventana Research. An August 2013 Ventana survey of 261 business managers and users found that one in three respondents said their implementations had significantly improved their business results, while half said location analytics had improved results slightly. American smartphone users, meanwhile, are a ripe source of data: 12 percent use a geosocial service such as Foursquare to share location information, a Pew Research Center study in September 2013 found. (That figure was down from 18 percent noted in a 2012 survey.) Globally, smartphone sales grew by 39 percent in 2013 to more than 1 billion units, IDC reported.

Venuelabs is not the only application developer correlating location data from smartphone owners' interactions and other social media users. Geofeedia, for example, allows users to create a map view of posts from Twitter, Instagram and other major services—a service designed for marketing which has proven useful to both law enforcement and the media. And academic researchers have showcased the potential for more, creating visual displays to examine local neighborhood behavior patterns in Foursquare posts and the political sentiment on Twitter during the Arab Spring in Cairo.

A key difference with Venuelabs is the mix of technology and human labor involved in creating analytical views of the data. Its dashboards rely on a staff of between 15 and 20 people to categorize consumers' input across more than 120 social media channels and local consumer sites. Another difference is that Crist makes no secret of the fact that getting value from the custom-built or customer-developed dashboards often requires practice and training that his team provides. The key is to help brands translate the data into insight that is meaningful and actionable, he said. Pricing starts at $5 per location per month.

Going Broad and Deep, with Human Help

As Venuelabs has developed its dashboard-based application, Crist said the company has learned that it takes both analytics capabilities and human intelligence to understand the nuance of mentions on Twitter, Foursquare, Facebook and many other consumer sites. The core idea is to help brand owners manage their local presence by seeing and listening to their local customers at the point of purchase, to identify and manage important points of presence and to engage customers, he said.

Diving into the streams turns up both structured data – a rating on Yelp, for example – with unstructured data points from a shared Tweet, a Facebook like, an Instagram or Foursquare mention, or a buying tip posted on Pinterest. There's far more unstructured data than structured. Venuelabs has found consumers typically use three to four mobile apps to engage with brands and merchants. "For any given brand, we see 15 to 20 distinct channels and sites that are important" for each location," Crist said.

That's the broad part. The deep part comes with the help of staff who categorize comments into categories like product feedback, staffing issues, praise, location cleanliness, and "needs attention."

Correlating these categories by location, Venuelabs users can build dashboards that provide windows into performance from a marketing or operational perspective, focused on a region or a specific location. They can establish benchmarks and track data over time to measure the success of a local coupon offered via social media, the progress on engaging customers in a certain city, and compare outlets in one region of the country to another.

And while Venuelabs initially set out to help marketers, the use cases have grown. For example, one customer, a gas station retailer, noticed that customers were complaining about certain lanes at the pumps were blocked when lines of motorists were waiting for

fuel. It turned out that the company had made an error in training staff about the timing of cleaning the areas around the pumps. The analytics "allowed them to see a systemic pattern and address a training issue at the regional level," Crist said.

When Social Media Analytics Becomes Organic

If a smartphone can feel like an organic part of a person's life, it only makes sense that PCC Natural Markets, a nine-store natural food retail cooperative in the Puget Sound region of Washington would have a social media specialist.

Ricardo Robago, who has held that title for about five years, notes his company serves a lot of technology-savvy consumers who care passionately about the sourcing and freshness of their food. That the retailer was on Twitter early enough to grab a three-letter handle, @PCC, reflects its desire to engage where its customers spend time, Robago said.

An application like Venuelabs puts a framing structure around a disorganized stream of activity. "You can see that when customers leave a store, they will tweet, Yelp, check in and share that with family and friends. And by doing that, we can understand if we are doing a good job, and if we're not, what do we need to do," he said in a recent interview.

Robago said Venuelabs fits into a set of tools PCC uses to listen to social media and to engage consumers proactively on issues ranging from the daily deli offering to public policy issues that influence the organic food industry in the state. Other social media monitoring tools in use include SproutSocial and SumAll.

The communication on social media goes beyond what consumers say about a brand—it's multi-directional. And analyzing that activity opens eyes about opportunities to improve performance, said Nancy Couch, director of loss prevention and safety for Maverik, a convenience store and gas retailer with 250 locations in 11 western states.

"It's amazing how many people share their experiences (big and small) with each other (friends and strangers alike) over social media," Couch said by way of email. "Being aware of new trends and fads that the customers are talking about, will allow the company to react quickly to increase sales, which, in turn, increases profit from which all departments can benefit. It may also allow the company to ameliorate a negative issue more quickly."

It's about the signal and the noise, Couch said. "Venuelabs has the ability to make a custom dashboard to sort out the incredible amount of chatter out there, allowing the company to decipher what should be handled or let go as harmless chatter." ■

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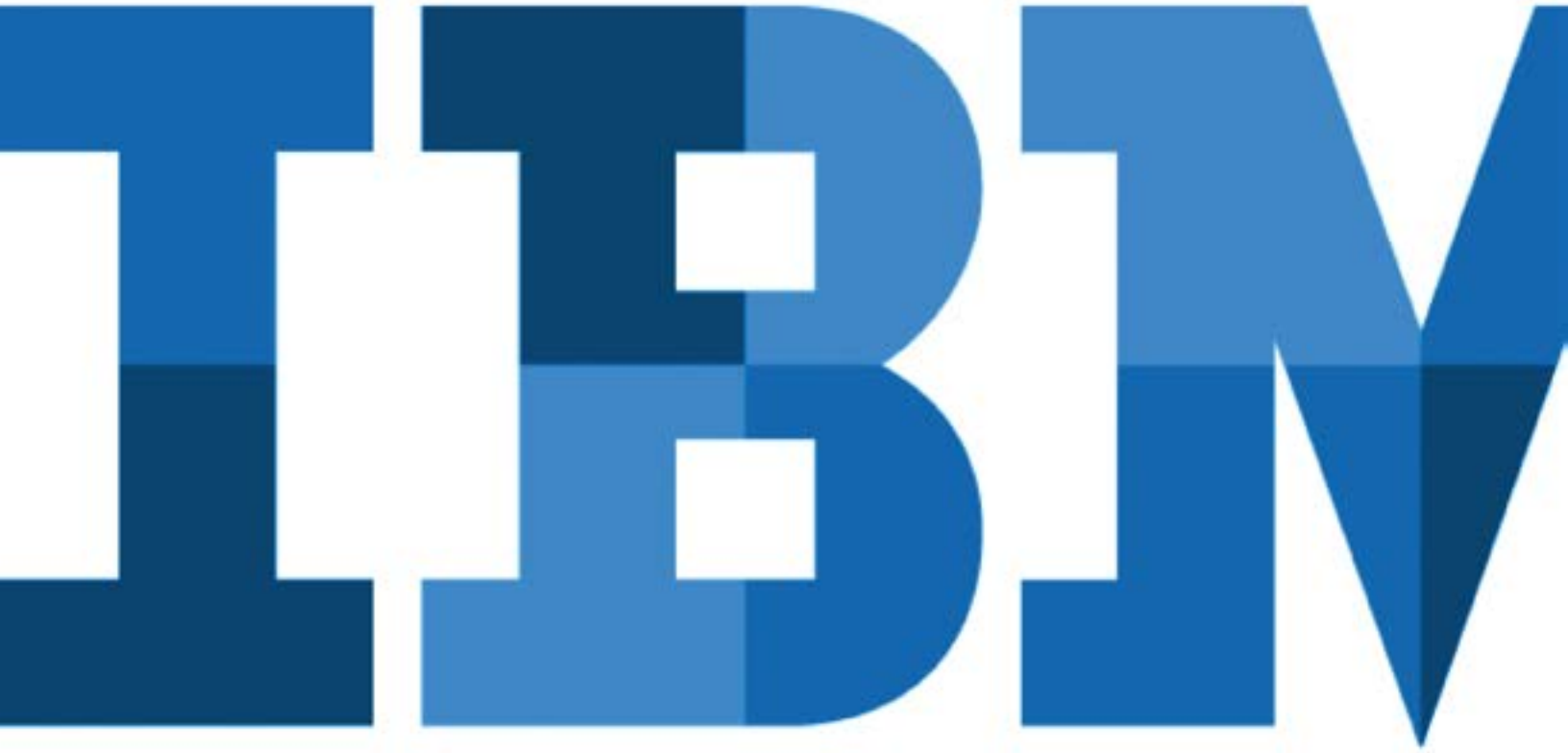
A New Frontier in Retail Intelligence: Where Imagination and Reality Connect

Taking Oracle Retail Analytics from Theory to Practice in the Real World



IBM

The pace at which retailers must make critical decisions about their customers, stores, digital channels, merchandise and inventory allocation is increasing, and the overall environment and marketplace are getting more complex. Retailer information and data are also increasing in velocity, volume and variety as it is flung from customer transactions, multi-channel interactions, an increasingly instrumented and aware supply chain, and a vast unstructured mass streaming from the social, competitor, and supplier spheres.

This information can be harnessed to glean insights, make faster and better decisions, rapidly match inventories with consumer demand, and increase profitability and competitiveness. This is achieved through business intelligence and analytics, in particular, when enabled by Oracle's Retail suite of analytics tools.

This certainly sounds promising in theory, and most have been sold on the business benefits of being artfully masterful at leveraging business information. But, is it feasible to achieve a three dimensional (3-D) view of the Customer given the nature of our complex retail environments? Can it really be actionable to users? And can we integrate our customer view with the other Organizational and Operational "lenses" across the enterprise? The power of decision-making, after all, will only be realized if it is workable, actionable, and realized. No "theory" can do this alone.

Read more on the 3-D Smarter Enterprise

To dive deeper into the overall perspective of the 3-D smarter enterprise, read part I: "Viewing the smarter enterprise with 3-D lenses"[1] and more on implementation leading practices in part II: "How and When to Embrace Oracle Business Intelligence"[2]

Through experiences helping major retailers deploy and realize the business value out of Oracle Retail Analytics, we've discovered the critical areas to get right, the crossroads where tough choices need to be made, and have identified the obstacles a team might not expect even with a good plan in place. Understanding these various success factors will help future teams realize the value of their retail analytics strategies faster, more effectively and with greater outcomes. And ignoring them may spell certain failure.

Rise of the Smarter Enterprise: 3-D Views into the Retail Operation

New trends such as increased consumer power, omnichannel strategies, online competitors, big data, customer experience management, endless shelves, the end of the cash register, location and context awareness, inventory visibility, digital marketing, social media and others have been forcing retailers to change and change rapidly. Every new capability one retailer launches changes the expectation of the customer base. Customers, too, push changes in the retail model as they rapidly adapt digital technologies in order to make their shopping experiences more informed, easier, more relevant, and socially connected.

Many organizations have embraced the concept of a smarter enterprise and the ability to holistically get a 3-Dimensional view of the enterprise across multiple departments and business functions. These "lenses" form the foundation of a strategy that will provide views into the various business functions of a retailer such as marketing, service, inventory management, merchandising, finance, HR and others. With a 3-D view, leaders will have the ability to view functions independently or together in concert to see interrelations and find new insights that are knowable with a cross-department view. These insights, in turn, enable business leadership to make optimal enterprise-wide decisions to further improve and differentiate their retail operations.

From a Retail Analytics perspective, the primary focal lens is that of the 'customer'. According to a recent study of retail executives performed by Oracle[3], 35% of retail executives cited that in the next two years that they will invest in "analytic tools to better understand customer behavior", making it the top chosen priority selected. IBM's own research also shows that CMOs are most unprepared for the "data explosion", with

Outperforming CEOs in Retail Leverage Analytics

According to a recent study that compared Outperforming CEOs to laggards in retail (based on financial performance), Outperformers are twice as good at deriving value from data – key to engaging customers as individuals.

- 52% vs. 26% in drawing insights from data
- 50% vs. 31% in translating insight into action
- 53% vs. 26% in access to data

71% response, making it the top challenge[4]. With the influx of retail data and the pressure to make faster data-driven decisions, it is imperative that retailers have a complete 360 view of the customer. In the past, this view mainly consisted of point of sales data and what customers have purchased. To compete in the current Retail industry, the view needed from this lens must expand to gain insight to broader questions including who are the most valuable customers, how can we attract customers, and how we can keep our customers engaged with our brand and products once they have made their purchase.

At first blush, a view that provides customer insight would be most relevant to marketers and merchandisers as they look to create the best experiences, drive new traffic to the stores and the web via more relevant marketing messages and offers, create the most marketable product mix, and drive customer loyalty. Delivering on promises, particularly with making sure the right inventory is in the right place, becomes essential to delivering good customer experiences. Inventory visibility becomes key when retailers perform cross-channel interactions such as "buy online and pick up at store". Inventory knowledge also becomes critical in responding to real life demand. If red shirts are selling on the East coast and hanging fallow on the hangers on the West Coast, inventory data can help us get the right products into the best places for sales.

Such a pervasive view of the customer requires an end-to-end integrated solution which Oracle Retail Analytics has the capability of providing. Additionally, once the customer lens has been defined, Retail Analytics can be further extended and integrated into other areas of the enterprise such as Finance, HR, and Supply Chain. By doing this, a retail can essentially achieve a complete 3-D view of Retail beginning from the Customer (e.g., CRM, Price, Loyalty) and extending to Organizational (e.g., Financial, HR) and Operational (e.g., supply chain, merchandising, procurement, manufacturing, inventory and distribution).

The 3-D view for the retailer is the foundation of their Business Intelligence (BI) strategy and ultimately determines which data, analytics applications, data processes, interfaces and BI skills the organization will adopt. The BI strategy for the retailer will often be focused on achieving several key objectives:

- **A view to the customer** and how they experience our brand
- **A view to the channel** and how we drive traffic to our sales locations (foot traffic to the store, online shopping, direct channels and mobile)
- **A view to the merchandise and assortments** – picking the right products for the right time for the right channel for the right customers that will drive profitability
- **A view to the inventory** – a critical element for retailers, both in how they plan inventory and how they redirect inventory based on real consumer demand and availability
- **Discover hidden patterns through data mining** – applying statistical algorithms to historical data can enable a better understanding of your customers' buying patterns and behaviors

Analytics, in theory, holds the keys to many of these top issues. And business experts across the industry fill pages describing the theoretical benefits of analytics and BI, but way too many theories haunt PowerPoint slides than ever deliver real-world value. Theory isn't enough. BI strategy must become operational reality.

This drives a key question: How do we turn theory into real business processes and outcomes? How do we get there?

The Analytics Capabilities for Retailers to Succeed

The first step of obtaining leading class analytics for retailers can be thought of in a couple ways. The retailer can catalogue all of their analytics business objectives and create a tops-down vision for what they feel will be an ideal suite of tools and techniques that they would use to improve their retail operations. An alternative way would be to examine the leading practices within the industry and to adopt the lessons learned that other retail organizations have already experimented and found success with. Oracle Retail Analytics applications were built by examining the state of the art, the most common, and the most important business objectives of retailers within the marketplace. Retailers may be able to speed the development of their own retail vision by first adopting the leading practice functionality already existing within the Oracle Retail Analytics solutions.

We believe an excellent foundation for Oracle Retail Analytics lies in two key applications suits: Oracle Retail Customer Analytics and Oracle Retail Merchandising Analytics.

Retailers Changing Their Game

According to recent IBM research - The "Leading Through Connections 2012 survey" retailers are changing how they use information to engage with customers.

- 78% of Retail CEOs cited drawing insights about customers from information as key improvement area.
- 72% of retail CEOs sought to improve understanding of individual customer needs in the next 3-5 years and 71% to improve response time to market trends.
- The mechanism by which Retail CEOs plan to engage with these customers will shift markedly over the next three to five years, with moves away from face-to-face sales and traditional media models to increases in the use of social media tools (up from 26 percent today to 72 percent) and websites (rising from 58 percent today to 71 percent)

Oracle Retail Customer Analytics:

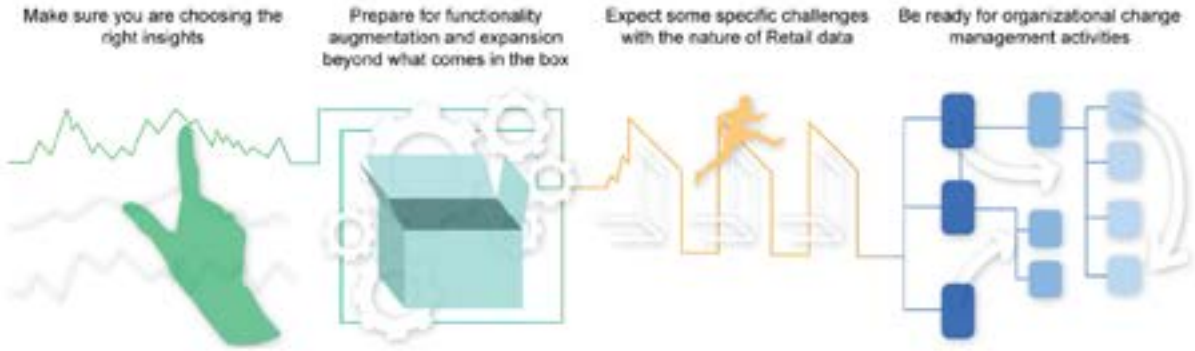
Built on the Oracle Business Intelligence Application platform, Oracle Retail Customer Analytics empower retailers to make better decisions and to better understand their customers. By providing capabilities in segmentation analysis based on factors such as demographics, customer value, and lifetime behavior, Oracle Retail Customer Analytics enable retailers to target promotional offers to their customers, boosting loyalty and revenues.

The solution offers a host of retail specific performance indicators reports, dashboards, metrics and KPI's that offer intuitive views into how products are selling and how customers are behaving. Leveraging this deeper understanding of customers' desires and behaviors, retailers can achieve competitive differentiation by better serving their customers. Oracle Retail Customer Analytics are fully supported by and are compatible with the Oracle retail suite of applications and function seamlessly across domains.

Oracle Retail Merchandising Analytics:

Oracle Retail Merchandising Analytics empower retailers by putting analytics directly hands of decision makers and are designed around Oracle retail best practices, offering functionality that delivers deep insights into all areas of merchandising operations. The solution offers a holistic view of the entire merchandising operation and is pre-built with integration for Oracle solutions for retail merchandise financial planning, invoice matching, sales auditing, and price management solutions. With retail applications built in, implementation is simpler and faster, keeping risk low and costs down. Performance data and scorecards let decision makers act quickly and effectively, and access to these indicators is available in a number of formats on desktop and mobile devices.

The solution is fully compatible with Oracle's CRM and ERP offerings and Oracle E-Business Suite, PeopleSoft, Siebel, and JD Edwards. This means that performance insights gained from one application can be integrated to inform decision-making across business operations.



Specific Lessons Learned in Deploying Oracle Retail Analytics

IBM has experience in deploying retail analytics at major retailers and the lessons learned may be valuable to any retailer pursuing analytics strategies. We've been down the path of converting good analytics theory to good analytics reality and know that there are certain issues and opportunities organizations will experience to implement Retail Analytics successfully. In short, if you miss these lessons in your deployment, your initiative will likely not succeed. Conversely, if you proactively prepare for these lessons, you'll avoid the time and waste of addressing them through learning the lessons the hard way.

While not an exhaustive list, the following lessons represent some of the most significant issues retailers will run into in their implementations of Retail Analytics.

1. Make sure you are choosing the right insights

Retail Analytics is capable of producing lots of different analyses and provides over a thousand metrics, so choosing the right insights to pay attention to is what will ultimately drive value from the system. This is a concern from both a business strategy perspective (e.g., "are we doing what is best for the business?") and a resource utilization standpoint (e.g., "are the analysts focusing their time on the most important insights?") There may be temptation to run many analyses that don't necessarily have a lot of value to your specific operation. This can be detrimental as decision-makers spend their time pouring over volumes of reports still not finding the few answers they need to make highly impactful business decisions. For example, creating large tabular reports covering many metrics and many attributes doesn't always enable quick decision-making. Users instead should look to build exception based reporting that enables them to focus on indicators of unusual events versus constantly monitoring every aspect of business-as-usual performance.

Determining the right insights will first come from the strategy and planning process where the objectives of the analytics program are determined. This will usually occur by focusing on business outcomes and then determining which

information will be needed to take better actions toward that outcome.

The right insights must also be tested for effectiveness. As real business action is taken as a result of the analyses, business leaders must be diligently and unabashedly critical with the outcomes. For example, if a particular analysis on customer churn was to reveal insights into reducing churn, then the measurements and KPIs on actual churn must improve to validate the analysis. If not, then the assumptions and the approach must be revisited. If the failure to obtain business objectives is external to the analytics program, then the analytics may be used to identify the culprit. For example, if churn analytics successfully found likely churners and then marketing or customer service practitioners failed to act, the problem may be in execution, not intelligence.

Perhaps the most important lesson here is not to delegate insight decisions to technologists nor solely to retail operations personnel. The 'art' and 'science' of retail analytics is a specialized domain. The skills associated in the scientific analysis of data and the raft of techniques needed are very specific. Similarly, the specific understanding of retail operations (e.g., segmenting customers, identifying shopping behavior, understanding inventory turns, etc.) is the domain of highly skilled experts. Be sure to enlist the right minds upfront on the key business insights required of the program long before purchasing any Oracle licenses, and don't skimp on budget or time when it comes to getting the strategy right and obtaining the best and brightest expertise on the subject.

2. Prepare for functionality augmentation and expansion beyond what comes in the box

Most organizations will find a few critical features lacking in the out-of-the-box functionality for Retail Analytics. Smart organizations should still complete their top-down visions for retail analytics even if they decide to largely adopt what comes out of the box with the Oracle retail suites. These gaps will inform the strategy and deployment teams of what needs to be added. In our experience, some of the out-of-the-box functionality is limited. This includes the establishment of hierarchies in product assortments, enhancements to certain key metrics like traffic, and some of the custom reports and dashboards as provided. Most of these reside in the desire to connect Retail Analytics beyond the data available within Oracle Retail. The decision to pursue these functions should be part of the overall retail BI strategy. Some examples of augmentation include:

Additional ETL and Master Data Management (MDM) to integrate into the back office: Oracle Retail Analytics can be integrated to the other "views" across the enterprise. Oracle has highlighted the "cross functional" aspect of integrating Retail Analytics with other OBIA areas such as Financials and HR Analytics. While this is ideal, there are several considerations when trying to do this. For instance, Oracle does not have a common ETL platform or master data management strategy and the Retail Analytics platform is different than the other areas. Special considerations on integration to other areas using Oracle BI products are needed to get a seamless view between Retail, HR, and Finance and the relevant dependencies.

Integration of Retail Analytics with Social Media: While Oracle does not "embed" retail analytics with social media, it is possible to extend the pre-delivered Retail Analytics model with social media for sentiment analysis, marketing/promotions analysis, and even analysis investor relations and investor sentiment. This adds a "social" view of the customer and allows retailers to gauge what populations of customers, prospects or other groups feel and think across social streams.

Integration of Data Mining and Real Time Decisions: Real Time Decisions is Oracle's decision management solution that delivers recommendations and automatically renders decisions within a business process to create tailored messaging for every customer interaction. While Retail Analytics does not "embed" data mining and Real Time Decisions as part of the out of the box solution, Retailers can use the Retail Analytics solution and

data model as a foundation for extending into data mining and Real Time Decisions capabilities.

Integration with Big Data solutions and Hadoop Clusters: While Retail Analytics does not come with Big Data functionality built in, Oracle does provide the integration capabilities to integrate with various big data solutions. For example, analysts can collect and analyze social data to determine fashion trends for buyer/planners.

Using Retail Analytics without Oracle Retail: For organizations that do not have Oracle Retail Applications, they can leverage the separate offering Retail Data Model that allows customers to use Oracle's Retail Analytics but requires special integration activities in order to work with non-Oracle retail systems. For example, ETL would need to be written to populate the Retail Data model as well as Custom RPD development to accommodate the Retail Data Model.

3. Expect some specific challenges with the nature of Retail data

Retail data is somewhat unique in that the nature of consumer transactions results in a vast and constantly updating data set. Some of the lessons we learned included:

Prepare for the highly volatile data that comes in the retail environment: Because of how quickly retail data changes, it's not unusual for the data set to have changed before the analysis is being acted upon. For this, we found the use of "As is" and "As was" views of key retail activity useful and often needed to implement one or both of these. The Retail Analytics solution provides an "As is" and "As Was" viewpoint for key dimensions such as Organization and Product out of the box. This enables the analyst to see changes in their analysis even as data changes over time.

Proactively manage transaction volumes and performance issues it can create: Performance considerations are critical for Retail due to the volume of transactions. Specific approaches can come from changing analysis techniques, process, scheduling and hardware and software strategies. For example, requirements around analyzing Item level data requires working through large volumes and needs to send reports via email, so this must be planned for accordingly. One intriguing hardware option is to explore Oracle Exalytics, Oracle's new in-memory big data appliance that can process massive data volumes with unprecedented speed.

Preempt ODI challenges: While ODI uses an ELT approach to improve overall ETL performance, there are trade offs and challenges to be aware of. For example, while ODI is an extremely flexible tool, with that flexibility comes more complexity in development and testing. ODI uses Java as a base for knowledge modules, so this requires developers to be Java savvy as well.

4. Be ready for organizational change management activities

Like any new capability, getting the software and data up and running only has value if the business users utilize the analytics capabilities and do so effectively. As part of the initiative's roll out and training program, pay special attention to several adoption and user issues. User adoption is a critical part of an enterprise Retail Analytics solution so change management must be a formal and well funded complement to the technical implementation. The value of Retail Analytics is to fundamentally enhance how people perform their jobs. Human nature and habituation often lead people to revert to their old ways, or even try to make the new tool replicate the inferior analyses they were used to. A good adoption program will go beyond training the users to use the interface, but will also educate users on how business processes will change, how decision-making will be improved and will incite users to be advocates for the business value that Retail Analytics can provide.

Retail Analytics: Should You Buy or Build?

Some organizations may still find their needs specialized enough to consider building their own. In general, we believe most organizations would still benefit from adopting Oracle Retail Analytics from both a cost and functionality perspective.

The sheet below shows an illustrative financial comparison between a pre-delivered Oracle Retail Analytics solutions and traditional custom BI retail approaches. The analysis of business benefit (e.g., the value of the analytics program, desired functionality, etc.) would be made separately before addressing this financial analysis.

Illustrative example of high level cost analysis – for discussion and illustration purposes only

Activity / item	Pre-delivered Oracle Retail Analytics Solution	Traditional Custom BI Retail Solutions	Notes and considerations
Analytics strategy and planning	$250K	$250K	Exalytics presumes a unified strategy vs. three separate silo strategies for traditional
Cost - Software licensing	$1000K	$0K	Assumes custom build solution
Cost – Deployment and integration	$750K	$4000K	Assumes custom application build
Cost – Middleware/ETL	$0K	$200K	Based on standard ETL tool pricing
Maintenance and support (annual)	$500K	$750K	Annual cost
Total	**$2,500K**	**$5,200K**	

Conclusion

Theorizing about the retailer analytics and BI strategy is perfectly useful for engaging executives in the conversation, letting imaginations run loose, and sparking excitement and exploration into the state of the art. Making theory a reality is wholly a different story. Just as an experienced guide can help travellers navigate unsure territory, so can experienced Oracle Retail Analytics experts help those new to the terrain. Those seeking to succeed with Oracle Retail Analytics solutions should look to a guide to point them in the right direction, help them sidestep bumps in the road, and feast on opportunities to create more expansive, 3-D views into their retail enterprises. Those that do will be poised to meet their critical customer and merchandising objectives, take new action on new insight, and further their competitive leads in a volatile retail marketplace.

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